APPENDIX A

CONFLICTS AND BARRIERS

TABLE A-1
CONFLICTS BETWEEN FREIGHT AND OTHER LAND USES

Mode	Category	Conflict	Description	Impact
Rail	Safety	At-Grade Crossings	Areas where railroads and roadways cross at the same grade, requiring vehicles to stop if a train is within the crossing zone.	Vehicles, at-grade crossings cause congestion when waiting for trains to cross. Additionally, such crossings may be blocked when a train is parked within the crossing zone but not over the road, as the train is detected by the warning and barrier system (if one is in place). Such crossings present a safety hazard to crossing traffic and surrounding land uses if an accident occurs. At-grade crossings might inhibit emergency vehicle navigation and slow response times. Customer access to commercial businesses might be blocked, leading to decreased sales. For freight operations, the concern and safety hazard of blocked tracks exists. Additionally, speed restrictions are put in place in an attempt to limit accidents at crossings.
Waterway Port	Safety	Navigation Restrictions	Inland waterway navigation is often reduced because of adjacent structures for housing and entertainment.	Along inland waterways with established commercial vessel traffic, such as barges and towboats, housing and entertainment structures, pleasure craft docks, and related permanent and semi-permanent structures. Restrictions can effectively narrow the commercial navigation channel, lower transit speeds, restrict or eliminate capacity, and create wakes.
Rail	Safety	Trespass	Freight facilities are often large, especially in the case of rail tracks, rail yards, and port facilities, and present the possibility of trespass. The presence of unauthorized personnel can be a safety concern with industrial machinery operating.	Safety is the main concern in this respect. Children, teens, and the mentally handicapped are just some of the examples of population segments that could be at risk for trespassing into dangerous freight facilities. Safety is the primary concern for freight operations as well. Accidents from the result of trespass can result in public concern over the operation and its proximity to at-risk segments of the population. Pressure to ban, move, or significantly alter operations could result.
Rail Waterway Truck	Safety	Dangerous Goods	The transportation and storage of dangerous goods (especially the 14 listed hazardous material categories) can pose a severe safety concern for freight operations personnel as well as residential areas.	Hazardous materials require specific handling and routing requirements. All communities in the United States have hazardous material routes delineated for safety reasons. However, accidents happen, and freight operational staffers and local communities can be impacted by these toxics.

Mode	Category	Conflict	Description	Impact
Rail Intermodal Yards	Safety	Container Storage	Storage of containers on rail sidings and less used routes can pose a concern for communities.	Storage of containers can cause safety, trespass, and visual blight conflicts to arise for both freight private sector groups and the communities themselves.
Rail	Safety	Agricultural Activity	Agricultural landowners often encroach onto railroad right-of-way (ROW) by planting crops.	This may be an overlooked area of encroachment, but placing crops on freight real estate can lead to animal/freight interactions, if animals are attracted to this area to feed off crops. Safety issues arise at harvesting time as these may be areas where there are no safety or other measures placed adjacent to the railroad ROW. A driver in a tractor or other piece of farm equipment may not hear the train whistle. Hay storage can also be considered bothersome and a nuisance in some instances.
Rail Air Waterway Port	Safety	Animals	Animals, both wild and domestic, can pose a severe safety concern to all modes of transport when they cross the path of freight operations.	For wildlife, the unnatural elements of freight operations can cut across travel routes that the animals frequent, disrupting their ability to migrate, hunt, and roam. Freight operations can frighten farm animals or household pets, causing stress upon the animals and their owners. For freight operations, wildlife presents an unpredictable obstacle that can cross the path of transport. The most notable examples of conflicting relationships would include ground wildlife/rail, deer/trucks, ground wildlife/trucks, birds/planes, and sea life/maritime operations. An example of the type of restriction that may be put in place is NOAA's finalization of a 10-knot speed limit in December 2008 to protect North Atlantic Right Whales in commercial sea lanes off the Northeast Coast of the United States. Additionally, free-range ranching would require restriction measures surrounding such networks as rail and road corridors.
Rail Air Port Trucking Waterway	Public Annoyance	Noise	Noise from freight operations, such as train whistles, horns, truck braking, plane takeoff/landing, port loading/unloading, and intermodal yard activity can become an annoyance to adjacent types of land use, especially during late hours. Noise can also be accompanied by vibration.	Noise can be an annoyance and lead to complaints to elected officials and freight companies. Disruption of sleep and other prevention of the enjoyment of one's land are the main resulting issues that lead to complaints. For freight operations, the risk of having their activities deemed a nuisance could result in costly or demanding mitigation techniques including: sound barriers, quiet zones, no-jake/air-braking zones, restricted gate or terminal hours, and specifically delineated routes.
Rail Air Port Trucking Intermodal Waterway	Public Annoyance	Vibration	Shaking/trembling caused by the movement of heavy freight and machinery, such as train movement and freight movement at ports. Vibration could result from plane takeoff/landing as well. Vibration is typically accompanied by noise.	Vibration not only can be an annoyance resulting in complaints, but it can also result in actual property damage at certain frequencies over sustained periods of time, which requires additional construction procedures to withstand the vibration. For freight operations, costly mitigation techniques may be required or even lawsuits/settlements for property damages.

Mode	Category	Conflict	Description	Impact
Rail Air Port Trucking Intermodal Waterway	Public Annoyance	Light	Light from freight operations, such as landing lights from planes or headlights of trains/trucks. Also could include the large amounts of light needed to move freight at facilities in the night.	Light can be an annoyance and lead to complaints to elected officials. Disruption of sleep and other prevention of the enjoyment of one's land could be a result. For freight operations, the risk of having their activities deemed a nuisance could result in costly or demanding mitigation techniques (time restrictions, walls, light pollution guards).
Rail Air Port Trucking Intermodal Waterway	Environment	Pollution	Pollution can result from various sources, from day-to-day operations to accidents releasing hazardous material into the environment. Engine operation, waste production, dust, and chemical spills/leaks are all examples of pollution opportunities.	Pollution presents various health risks to the public depending on the type. Long-term effects could result from day-to-day operations, while serious short-term effects could result from an accident. Additionally, segments of the population who are more sensitive to pollution could have their complications worsened. For freight operations, public concerns could result in mandates to use pollution reduction options, such as low-emission diesel engines, scrubbers, hybrid vehicles, and water treatment systems. Other restrictions to cut pollution could result in speed restrictions, no idling rules, operational cutbacks, or specific route mandates.
Port/Waterway	Environment	Lock closures to block invasive species	The system of locks used for inland waterway transport relies on the release of massive amounts of water between controlled portions of the waterway. This forms a temporary connection between bodies of water that can facilitate the spread of invasive species. In certain instances, shutting down lock systems has been proposed as a strategy to prevent the spread of invasive species.	Invasive species do present a real threat to local ecosystems. Shutting down a particular lock, however, is unlikely to permanently stop an otherwise uninhibited species from entering a waterway. Human actions and severe weather events can also facilitate the spread of invasive species even when natural barriers have been sealed. Temporary lock closures may be deployed as part of a temporary and targeted strategy to interdict and neutralize an invasive species.
Port/Waterway	Environment	Water quality impacts from dredging	Dredging can temporarily change the salinity or turbidity of surrounding bodies of water. It can also dislodge pollutants deposited from past industrial activities or disturb benthic ecosystems	In most cases, the impacts of dredging are minor and changes in salinity and turbidity that are caused by dredging also occur during natural weather events. The environmental impact from the release of pollutants from undisturbed soils is difficult to predict. It is most commonly a problem in capital dredging projects in which a channel is widened or deepened and is more rarely a problem during routine maintenance dredging which is used to remove recently deposited sediment.
Port/Waterway	Environment	Restrictions of ballast water	Ships and barges release ballast water when arriving in port. This water can contain exotic species from the port in which the ship originally sailed.	The Coast Guard is required to regulate the number of invasive species introduced via ballast water by the National Invasive Species Act of 1996. The Coast Guard has recently taken steps to strengthen the regulations. However, there are concerns from the maritime shipping industry that further regulations could inhibit maritime commerce.

Mode	Category	Conflict	Description	Impact
Trucking Rail	Land Planning	Traffic congestion & bottlenecks	Lack of adequately designed infrastructure (poor turning radii, signal timing, etc.), aging infrastructure, and a simple lacking of capacity all can contribute to congestion and bottlenecks. At-grade crossings can also be a part of this conflict.	Congestion and bottlenecks have similar effects on both freight and non-freight travelers. Such conflicts can cause operational safety concerns due to high volumes of infrastructure users. For the public, stalled traffic creates additional pollution concerns and lost productivity. Frustration over large amounts of truck traffic can lead to complaints and demands for restrictions in place. Emergency response services can also suffer a difficulty to providing essentially rapid responses when a corridor becomes congested. For freight operations, the cost of slower transport is incurred, along with safety concerns for train operators whose route goes over busy at-grade crossings and for truckers handling passenger vehicles cutting into their safe-braking buffer. Frustration over truck traffic can lead to route restrictions and tolling.
Rail Waterway Port Trucking	Land Planning	Operational activity	Differing land uses can affect freight scheduling and operations.	Many freight operations require 24-hour operations. As an example, tugs and barges often operate on 24/7 schedule. Without the flexibility to run such schedules, the cost of tug and barge services may rise. Railroads and intermodal yards also cited this is as an ongoing issue/barrier for operational flexibility.

TABLE A-2
BARRIERS TO EFFICIENT FREIGHT TRANSPORTATION

Category	Barrier	Description	Impact
Mapping	Lack of Access to Maps	Easy access to maps of freight facilities has led to many jurisdictions having incomplete maps of their cities/regions and the freight network. This leads to poor future planning and to current incompatibilities that arise where residential and other sensitive land use developments abut, or are in proximity to, freight uses.	The impact of poor mapping means that planners and developers may not fully understand the type and intensity of freight activity within an area. This can lead to poor development design and lot layout, and at its zenith, to residential complaints for noise, vibration, and other safety and nuisance concerns. It also often leads to channeling of children onto rail lines as 'shortcut' to get to school and other activities.
Operational	Speed Restrictions/Reductions	Less than optimal speeds for freight movers can result from various sources. Congestion from passenger movement and growth of an area's density and population can make it unsafe for speedy travel through a corridor. Neglected infrastructure can also reduce the speed capacity of a segment.	Speed restrictions—often instigated to appease community concerns—limit the capacity of infrastructure, especially on railroads. They also limit shipping availability and can restrict just-in-time supply chains. Speed reduction due to congestion creates uncertainty that must be priced with the cost of doing business.
Operational	Height Impacts (trucking and rail)	Height in terms of new structures being built on the highway side can also impact both rail and trucking operations.	New structures and infrastructure that is built can reduce existing height clearances for the trucking industry. This will impact the availability of route choice for trucks. In other instances, height restrictions impact the operation of double stack containerized trains. Again, this can lead to bottlenecks and reduced operational times, affecting JIT manufacturing.
Operational	Height Impacts (airports)	Height issues caused by tall developments around airports impact flight paths and approach and departure procedures, often leading to airline payload penalties.	These are growing increasingly challenging at urban airports that are surrounded by tall developments. Airport operators are working aggressively to protect airspace around them. Airport operators typically lack the zoning authority to limit building heights off-airport, and federal regulations lack teeth to ensure that approach and departure procedures aren't adversely impacted by tall structures off-airport. This can result in airline payload penalties (which often hit cargo carriers hardest) and, in worst case scenarios, can limit effective use of runways by arriving and departing aircraft.

Category	Barrier	Description	Impact
Operational	Size and Weight Impacts (trucking)	Rules and regulations placed regarding size and weight (specifically for trucking) can impact the ability to move these loads efficiently.	Conflicts are growing around many ports that are importing and exporting large 'one-off' type pieces of equipment, for example wind turbines and wind towers and blades. These large items may need to be drayed to a rail yard for rail shipment and then drayed from rail to their final destination. In many instances, local communities are restricting the routes that can be utilized for such loads. This leads to bottlenecks and to the inability to effectively manage large load movements of such manufactured items.
Operational	Highway and Roadway Design	Highway and road design often lead to difficulties for the trucking industry in terms of turning radii and other elements coming into and out of freight and manufacturing facilities.	As an example, concrete islands in the centers of roadways can limit right hand turns for trucks. Other structures built in roadways, often built under the rubric of 'context-sensitive-solutions' to improve roadway aesthetics, can also affect capacity.
Operational	Truck Idling Restrictions	Truck idling restrictions are always put into place in areas that are classed as non-attainment for air quality. Other jurisdictions also chose to enact idling restrictions from a health and safety perspective.	Idling restrictions, while much needed, can create other operational stresses that have to be mitigated throughout the supply chain. They can reduce route choice, could potentially require more truck idling rest areas, and can tap into an environmentally friendly fuel supply, as drivers adhere to their mandated rest times under Hours of Service Rules imposed upon truck drivers.
Operational	Channel Depth	Ensuring channel depth for waterways requires dredging that necessitates acquiring permits and USACE approval.	The process for dredging is long and convoluted, usually requiring NEPA analysis and other legal reviews. With the development of larger container ships, dredging has become a critically important component for many ports to ensure their economic well-being. The USACE is responsible for dredging activities at ports, the GIWW, and Mississippi River.
Operational	Shared Use of Corridors	In many instances, local jurisdictions are reviewing the opportunity to utilize existing freight corridors for commuter service.	Shared use corridors, while presenting opportunities for commuter rail development, may find over the longer-term that developing transit oriented developments adjacent to these corridors can cause community conflicts. This is because, in many instances, freight traffic is temporally shifted (usually to night-time service), leading to residents facing noise, vibration, and whistles at grade crossings during the nighttime freight service.
Planning	Development Pressures/Power	Development can be a highly profitable business, and that can often bring about a heavy influence over land use and policy.	Pressure and power from the development community can lead to the development of the most profitable project, which may not be a compatible use to nearby freight operations. This can then lead to many of the conflicts listed in the Conflicts table. Difficulty to expand or improve operation can result for the freight operations. Additionally, such pressure and power can thwart or complicate long-term planning efforts, such as transportation and/or freight plans for a region, as well as for future expansion of freight facilities.

Category	Barrier	Description	Impact
Planning	Permit and Environmental Review Processes	Permit processes can forestall efficient implementation of freight facilities.	Some freight facilities take years to come to fruition because of slow permitting processes and the length of time to conduct environmental reviews and, in some cases, confusion over whether a NEPA review is required. Upgrades and additions to freight facilities can also spur conflicts with local communities. This has been especially prevalent in airport upgrade and improvement projects. Because of the complex interplay between the various jurisdictions who are responsible for airports, projects can take many years to be completed and can impact the ability of all-cargo airports to effectively continue or increase business opportunities.
Planning	Development of Open Space	Increasing property values and/or the need for more development has at times reduced or eliminated this space.	Open space is often used for buffering incompatible land uses and freight operations. The reduction of this space in favor of development can lead to many of the conflicts that are prevented by the space to become apparent, leading to many of the impacts described in the Conflicts table. It can also alter water management, which may affect freight operations through flooding.
Planning	Reuse of Abandoned or Banked Facilities	Abandonment of railroads has occurred over the past 30 years. Many communities do not realize that the abandonment process is often a 'holding' process to keep access to the ROW for potential future use.	Over the past 30 years, many railroad rights-of-way have been abandoned by the railroad and either purchased by the DOT or local jurisdiction for banking or utilized for interim trail use. Subdivisions have been built up around these corridors, and home buyers are often told that the corridor will be converted for trail use. If a railroad wishes to recommence services, communities will often coalesce to stop resumption of rail service.
Planning	Property Value	Differing land uses can have adverse effects on each use's property value, which includes both rising and falling values depending on the use involved.	For incompatible uses, freight operations can lower property values due to many of the conflicts documented here. For freight operations, increased incompatible land uses such as residential neighborhoods and commercial districts can cause a rise in property values. This in turn makes it more expensive to operate in the area and potentially results in pressure from other land owners to move the operation due to the opposite effect the industrial land use has on the incompatible land uses or because of the development potential the industrial site has.
Planning	Airport Zoning	While there are federal policies and local zoning rules to protect airports from incompatible land use, the FAA cannot enforce local formal zoning rules, and cities and counties are often pressured to remove zoning restrictions by developers.	Because there is no federal preemption to effectively enforce FAA rules, encroachment around airports has become an issue. While the FAA has provided grants to mitigate for noise and grants for airports to purchase properties, conflicts still arise. Litigation has also occurred around airports when zoning rules have been changed that have limited the height or other aspects of buildings.

Category	Barrier	Description	Impact
Funding	Cost/Funding Availability	The cost of acquiring land for preservation or expansion is becoming increasingly burdensome, while funding sources can fluctuate in availability but are generally declining.	The ability of local governments and other government agencies that have land acquisition powers for preservation/expansion purposes continues to become more costly, especially in areas where development has already occurred or in highly-valued locations. This makes it difficult to buy excess land for future use. Additionally, there are a growing number of funding-seekers for a decreasing pool of funding. Historically, freight rail has not been given public funding. Recently, this has begun to change, but freight rail projects still compete with passenger projects that are often more visible to the public. This can result in difficulty gaining funding, unless the project has a passenger transport value as well.
Funding	Acquisition Methods	The methods available to involved agencies to acquire land for preservation or expansion sometimes varies by state and can often be limited.	In areas where the government or its agencies are heavily limited in their ability to acquire land, the ability to adequately plan and reserve space for expansion is difficult. This can increase the cost of transportation development. Railroads are also reluctant to use their condemnation power given the current political climate since the *Kelo v. New London* decision.
Funding	Dredging and Lock Maintenance	Funding for lock maintenance and dredging is limited and therefore requires the USACE to prioritize projects across the entire marine network.	In areas where recreational boating and marine activities lie in close proximity to marine activities, the ability to maintain channel depth is especially critical for continued port viability. Historically, USACE maintenance and dredging funding has been considered to be severely underfunded. This has impacted maintenance and dredging activities.
Communication	Communication from Private Sector	Historically, the freight community has not engaged within the community, attended planning meetings, or been 'visible' in the community.	The historic lack of effective and ongoing communication has often led to a 'them-and-us' type dynamic between freight, local planners, developers, and citizens. In many instances, the different planning horizons led freight to not be involved in long-range and other planning initiatives. This meant that these agencies did not learn first-hand the issues surrounding freight and potential impacts, and most importantly, they did not fully understand the value that the freight system brought to their community in jobs, taxes, and other economic benefits. Non-engagement also meant that educational institutions have often not taught freight in planning and other policy-type classes, as they have not known who to call in freight groups to discuss freight planning.

Category	Barrier	Description	Impact
Education	Lack of Freight-Awareness	Freight is not always on the list of concerns for agencies or local governments that may have authority to program funding for freight projects in their policy documents. Often this can be attributed to simply a lack of awareness as to the importance of freight networks to a region.	The lack of freight awareness can result in many of the items in the Conflicts table. Increasing the awareness of freight operations could reduce the likeliness of incompatible land uses. Additionally, freight plans can provide a glimpse at what are the important freight corridors in an area and what the future freight goals of an area might be. Again, the lack of awareness can lead to unknowingly conflicting development.
Education	Outdated Perceptions	Various perceptions of freight transportation exist, often related to the lack of freight-awareness. Such things as the belief that rail is not an important mode of freight transport is an example.	Outdated perceptions can make freight activities, however important, unpopular despite any attempts to mitigate possible conflicts. This can make freight advancements difficult to push in a community and hurt the importance of all modes of transport.
Government	Multitude of Government Layers/Overlapping Jurisdictions	A single location can often fall under the jurisdiction of multiple government entities, from local governments to water districts, as an example.	Organizing various layers and agencies of government with various concerns and directives can be burdensome to traverse when attempting to complete a large project. A jurisdiction that knows it is one of the remaining areas to approve a project could use their position in an attempt to gain more concessions out of the project, causing delays and cost increases. The threat of a jurisdiction refusing to cooperate at all is also a possibility, leading to perhaps a less desired option that is more costly and difficult to accomplish. This burden could be so severe as to prevent advancement altogether.

Category	Barrier	Description	Impact
Government	Political Will	Freight projects and policy often do not receive the political importance as other options, such as passenger rail-related options and highway funding items. It is often politically difficult to convince the public to provide public funds to projects that will benefit the private sector.	Freight projects do not provide much political visibility for elected officials, thus they often do not receive the attention they might need. Additionally, policies such as overlay districts and freight-related zoning, along with proper land use coexistence measures, have yet to receive heavy political backing in many areas. They can be legally difficult at times, thus officials may avoid them. Such tools could positively guard against the items listed within the Conflicts table, but the lack of political will results in the status quo of development policy. The lack of political will is a result of a variety of causes, which probably include the search for local tax base from new development, a desire for an attractive built environment, the votes of residents placed in opposition to non-resident freight operators, ignorance of the importance of freight among both elected officials and their constituents, and dislike for all the negative impacts of freight (noise, congestion, etc.). There is also something of a "tragedy of the commons" that happens—it is in each locality's individual self-interest to support other uses at the expense of freight, but it is in the collective interest of all to support freight.
Staffing	Labor Issues at Ports	Labor groups at ports often implement new rules for members that impact surrounding communities.	Labor organizations have begun to refuse to work while trains are entering into port facilities, leading to operational impediments and the back-up of other freight components in local neighborhoods, often many miles from the ports' operations. Some labor organizations have also begun to implement stricter 'break-time' rules which affect the operational capacity of freight facilities. This has been especially noticed at the Port of Los Angeles/Long Beach and has led to both trucks and freight trains having to 'wait' until staff return from such breaks.
Staffing	Ongoing Labor Staffing and Training Issues for the Industry	There will be a critical need in the next twenty years for highly qualified and competent freight staffers.	The labor staffing and training issues for the freight industry are an ongoing problematic issue. The U.S. trucking industry's human resources component has been cited as needing many more drivers over the next twenty years to handle the expected trucking expansion because of continued global trade expansion. Similarly qualified engineers and other locomotive staff for the shipping and railroad industries will cause barriers for efficient freight movement.

APPENDIX B

CASE STUDY: STATEN ISLAND RAILROAD

Introduction

The Staten Island Railroad (SIRR), an eight-mile freight rail line which today serves as the New York Container Terminal's on-dock connection to the Class I rail network, stands as an example of successful freight corridor preservation of a railroad that was originally slated for abandonment. The re-establishment of service on the line accomplished two major strategic goals for the New York area: 1) providing on-dock rail service to the New York Container Terminal (the former Howland Hook terminal), which had been the only major container terminal at the Port of New York and New Jersey (NY/NJ) without rail access (Port Authority of New York and New Jersey 2007); and 2) allowing the City to shift its solid waste disposal activities out of Staten Island to a remote location while retaining a significant number of jobs connected to the solid waste disposal industry on the island.

When the line was originally slated for abandonment, neither of these future uses had fully come into view. Yet, because of the strategic decision by the New York Economic Development Commission (NYEDC) to acquire the line, it has now become a vital corridor for the economy of Staten Island. As such, this project clearly demonstrates the advantages of taking a "preserve first" approach for freight facilities that fall into disuse (New York City Government 2007). The SIRR project resulted from a $75 million dollar rehabilitation funded by the Port of NY/NJ and the NYEDC.

Starting in 2008, the CSX provided daily intermodal service over the line to Chicago, IL; Columbus, OH; and Detroit, MI; and on alternate days to Cleveland, OH; East St. Louis, IL; Kansas City, MO; and Worcester, MA (U.S. Federal News 2008). In the first year of its operation, the service was estimated to move 45,000 containers, thus removing 70,000 truck trips from area roads.

Background

Staten Island has long been referred to as the forgotten borough of New York—a place that many people have briefly visited, but about which, few outsiders have intimate knowledge. Staten Island has the lowest population of any of the five boroughs and has a decidedly middle-class orientation with the lowest poverty rate in the City. It also is the fastest growing borough in New York, growing by over 10 percent in the last decade, roughly twice the City average (New York City, Department of City Planning 2009). With no passenger rail connections to the other boroughs, Staten Island retains an insular culture a few nautical miles from lower Manhattan. A secession drive that played a large role in political discourse during the 1980s was driven by cultural and well as economic considerations: "We're islanders. The Irish, the British, the Japanese would understand, I guess. We feel pretty strong about it." stated Senator John Marchi in explaining Staten Island's view toward further affiliation with New York City in the early 1980s (Carroll 1983). Staten Island's independent orientation factored heavily in the

development of the Howland Hook container terminal and the Staten Island Railroad, whose development was intimately tied to the history of Howland Hook.

Upon its opening in 1977, the Howland Hook container terminal represented New York City's best hope of taking back a significant share of the increasing lucrative container business from New Jersey terminals, such as Port Elizabeth. New York City officials believed it was important to maintain a thriving terminal within the boundaries of New York given that the Brooklyn industrial waterfront was already falling into disuse. The decline of Brooklyn as an industrial center was blamed, in part, on a "dilapidated" freight rail system that was "choking" the waterfront (Schumacher 1980). Conversely, Staten Island's rail connections, following the creation of Conrail, were favorably compared to those connecting the other boroughs of New York (Schumacher 1980).

Shortly after the time of Howland Hook's creation, the New York Times lamented,

> The only part of New York to escape the pattern (of degrading rail infrastructure) is Staten Island, which is connected by a direct rail bridge to the Conrail network in New Jersey. It is that rail connection that allowed the construction of the city's profitable Howland Hook Container Port on Staten Island (Schumacher 1980).

Soon after the Howland Hook terminal opened, analysts recognized that the rationale for the existence of the Howland Hook terminal was its rail connection. A decade later, the rail connections leading to Howland Hook were dilapidated. The modestly-sized Howland Hook terminal, along with the even smaller Red Hook container terminal (opened in Brooklyn in 1981), were seen as a belated and insufficient attempt by the Port of NY/NJ to catch up with California and southern Atlantic ports in the container revolution (Blair 1982).

Through its early history, the Howland Hook terminal was almost entirely dependent on US Lines, its anchor tenant. However, US Lines struggled with the terminal's modest dimensions. The issue became particularly challenging after US Lines added container vessels too large to be accommodated by Howland Hook under its 1985 configuration. The terminal, which was leased to US Lines to operate in 1985, suffered from factors such as the small size of the yard, poor landside connections, and a draft limitation of 35 feet. In a September 24, 2010 interview, Don Lotz, Manager of Intermodal Development for the Port of NY/NJ said that the existing rail line received "modest" usage by US Lines for intermodal shipments, including the repositioning of empty containers.

US Lines filed for reorganization in November of 1986 (DePalma 1987). Still under Chapter 11 bankruptcy protection, the carrier broke its lease with the Howland Hook terminal in 1987 and moved to Elizabeth, New Jersey. The timing could not have been worse, as the terminal had just embarked on a $100 million expansion program that would have included rail yard upgrades. The pier closed later in 1987. Low-level shipping activity resumed in 1988 with Sea Terminals as a new client and operator. However Sea Terminals abandoned Howland Hook in 1990 (New York Times, 1990). Figure B-1 (GoogleEarth 2010) shows the Howland Hook marine terminal in 1995, prior to its reopening.

FIGURE B-1
HOWLAND HOOK MARINE TERMINAL PRIOR TO REOPENING, MARCH 28TH 1995



The terminal continued to experience a series of ups and downs, with various potential operators first committing and then backing out of agreements to take over the terminal. In the meantime, the formerly strategic rail connection to New Jersey continued to deteriorate while the Port of NY/NJ's capital investment in the terminal continued to grow, building on the remnants of the initial revitalization plan that was launched in 1986. However, there was increasing public reticence for further investments. By 1994, the NY/NJ Port Authority had invested $35 million in the terminal and it was still losing $7.7 million a year (Gilbert 1995).

Abandonment of the Line

The rail line that would become the SIRR had been owned by the Baltimore & Ohio. Ownership of the underlying right-of-way (ROW) was subsequently transferred to CSX, with a third party owning the track and operating the trains. CSX sought to abandon the ROW when the Proctor and Gamble factory along the line closed in the early 1990s. The line had seen robust usage through the 1980s, but was severely affected by the bankruptcy of US Lines in 1986. That same year, the line's traffic peaked at 1,742 carloads (Feiden 1992). Nevertheless, the rail line was not well maintained, even when traffic levels were high. As noted in the case, *Railway Labor Executives' Association, Plaintiff-Appellant, v. Staten Island Railroad Corporation and Staten Island Railway*:

> In December of 1984, SIRC filed an application to abandon its rail system pursuant to 49 U.S.C. Sec. 10903, claiming loss of profits and poor conditions of the lines as the bases for its decision (792 F.2d 1986).

Traffic on the line fell approximately 90 percent after the 1987 closure of Howland Hook, and for a number of years it was barely sustained by Proctor and Gamble.

In the late 1980s, the last two customers on the line were Proctor and Gamble and Con Edison. The power plant was switched over to dual fuel oil and natural gas feedstock in order to meet air quality goals and no longer had a use for the line for coal deliveries. Proctor and Gamble closed its doors in the early 1990s. With no viable services on the horizon, the Staten Island Railway Corp (SIRC) and CSX sought to abandon the line and filed to do so with the ICC/STB in 1992. The Port of New York protested the decision of the ICC to go ahead with final abandonment. According to Mr. Lotz, the ICC argued that it could not require the line to remain in service solely on the chance that business at Howland Hook might be restored sometime in the future.

Acquisition

It is not difficult to see why, when the City of New York started to examine the purchase of a defunct railroad leading from the terminal to New Jersey that was "crumbling and ramshackle" with some tracks "already submerged beneath the fetid waters of the Kill Van Kull," suspicions naturally arose that the project may not be the best use of public resources (McKinley 1994).

The State of New York had instituted a requirement that, when a railroad declared its intention to abandon a line, the State has a right of first refusal. The line to be abandoned ran from Staten Island to Union County, New Jersey. After the State of New York exercised its rights to acquire the corridor for a purpose that was to be determined, elected officials voiced support for studying the use of the right-of-way for transit purposes. Restoring passenger service to Staten Island had been a long-term aspiration of Staten Island Borough President Guy Molinari and his daughter, Rep. Susan Molinari, who earmarked $10.7 million within the Intermodal Surface Transportation Efficiency Act (ISTEA) to purchase abandoned rail corridors.

Serious public discussion of the NYEDC's interest in acquiring the line from CSX began in 1992 (Feiden 1992). The ICC set a deadline of mid-August 1992 for the line's formal abandonment. The Staten Island Railway Corp (SIRC) was the final operator that owned the tracks and ties. As discussed above, SIRC filed to abandon with the ICC in March of 1992. At that point, the

railroad's entire value, estimated at $750,000, was as salvage. The ICC's ruling meant that the SIRC could begin salvage operations after 180 days. Given that most of the capital assets were beyond repair, the urgency to prevent the SIRC from removing the tracks was partially psychological. Given the fact that some freight trains had utilized the line as recently as 1991, it was easier to make the case that acquisition by the NYEDC would result in the restoration of the line rather than full-scale reconstruction, even though the latter description proved to be closer to truth. Mr. Lotz said that the Port knew that the line would require substantial rehabilitation if it was going to accommodate heavy double-stack volumes.

The earmark from Rep. Molinari gave the NYEDC substantial authority to pursue the rail line, having already attained the legal jurisdiction over managing the acquisitions. Most of the proposed uses for the corridor were either transit or industrial. Given the highly industrial orientation of the land, no "rails-to-trails" use was considered. The original grant for acquisition was funneled though the Federal Transit Administration (FTA), so it was first acquired with a transit orientation. However, there was not a sufficient population shed to draw from in order to expand the line for transit use. In a May 2, 2010 interview, Alice Cheng of Cheng Solutions (and formerly of the NYEDC) said that after these initial evaluations were completed, the line was designated for freight.

The fact that federal dollars played a strong role in the $10.3 million purchase from CSX, along with the New York and New Jersey agreement to share the cost of rehabilitation, helped to prevent the line acquisition from receiving the same level of scorn that had been directed at other attempts to revitalize Howland Hook. In a July 22, 2010 interview, Ted Matthews of the North Jersey Transportation Planning Authority (NJTPA) said that the idea that passenger rail service, which had been abandoned on the North Shore in 1958, could be restored also helped to sell the idea to the public. According to Mr. Matthews, there had been a long-standing desire for additional transit service in the region, as residents did not have options to move around, and were pressuring local leaders to establish transit service. However, the need for adequate freight rail service was even more pressing. At the time of the acquisition, direct rail shipments accounted for only 2.8 percent of the city's total freight volume (McKinley 1994). Furthermore, Staten Island remained the last viable area where a New York terminal could compete with the port facilities of New Jersey for cargoes that would terminate outside the metro area.

One of the last obstacles that had to be resolved in order to reopen the Howland Hook terminal was dredging the channel. After years of neglect, the surrounding channel had silted to 30 feet of draft. In 1995, the NY/NJ Port Authority agreed to pay $17.7 million to transport dredge material by rail and barge to a disposal facility in Utah. This cost was approaching twice the sum that had been paid for the Staten Island railroad acquisition, and occurred at the same time the NYEDC was attempting to determine the best future use of the Staten Island Railroad. In June 1996, the Port Authority directors approved, in principal, the reopening of the rail corridor serving Howland Hook for freight use to connect to Conrail in New Jersey (Sullivan 1996). The Port Authority set up a subsidiary and issued a request for proposals for a private operator. The rail rehabilitation was linked with the other investments made, with one analyst stating the "Reactivation of the SIRR gives New York City and the Port Authority the only real hope to get a return on last year's Howland Hook dredging investment" (Aichele 1996). While the line was clearly beneficial to New York, New Jersey officials worried that the benefits of reactivation would bypass their state. For this reason, a proposal was made to join the SIRR with the Rahway

Valley Railroad, which had been abandoned in 1992 (Aichele 1996). The southern portion of this railroad was connected to the SIRR in 2005, although other portions remain abandoned.

The Howland Hook terminal reopened on September 22, 1996. At the time, the on-dock rail facilities were expected to be opened sometime in 1997 (Lloyd's List International 1996). The Port Authority's capital plan, adopted in 1997, included funding for SIRR and Howland Hook terminal improvements (Lloyd's List International 1997). By late 1997, the newly reopened terminal's volumes were already starting to put stress on the area's road and bridge network. The Goethals Bridge, in particular, was ill-suited to accommodate trucks with its narrow 10-ft lanes (Lloyd's List International 1997).

Potential Uses of the SIRR

The SIRR was purchased prior to the announcement that the Fresh Kills landfill in Staten Island would close (Lloyd's List International 1997). Fresh Kills was long a point of contention between the City of New York and Staten Island residents, who believed that it represented the willingness of the City to outsource its problems to them. In 1980, the Federal government classified Fresh Kills as an "open dump," and declared that it would have to be significantly modernized to remain open (Campbell 1981). As other landfills around the New York metro area were closed, the exceptional character of the Fresh Kills site, which by 1987 was handling 94 percent of New York trash, became difficult to ignore. City officials at the time were promising that the site would be closed by 1997 (Firstman 1987).

In 1998, serious discussion was also underway as to the potential future use of the SIRR in shifting the disposal of solid waste away from Staten Island to remote locations. Containerization of solid waste cargo was seen as a way to reduce truck traffic. If this transfer was performed at the Howland Hook terminal, it would also provide a steady source of business at the terminal as well as increasing its role in benefitting the entire community. However, the technology of containerizing solid waste was seen at the time as experimental and, for this reason, was originally rejected by the NYC Department of Sanitation Commissioner (Brown 1998).

Over the summer of 1998, work was simultaneously being performed on the rehabilitation of the Arthur Kill lift bridge and the connecting Arlington Yard, which would be used for train assembly. Confusion soon arose regarding the potential future use of the line. Some New Jersey officials worried that the plan endorsed by the Class I railroads would not allow enough benefits to accrue to local industries in New Jersey as major intermodal trains would, instead, bypass the state to connect to major Midwest markets (Newman 1998). With the Port of NY/NJ becoming more and more profitable in the late 1990s, conflicts between New York and New Jersey over how to divide profits escalated (Yardley 1999). This spat occurred at a time when New York City had already completed much of the rehabilitation of the tracks over the Arthur Kill Bridge, yet the New Jersey section of the route was still being developed. The NYEDC had made the initial investment of $11 million, which was then used as justification by the Port of NY/NJ in approving bond money to rehabilitate the terminal. While the Howland Hook terminal planned to use the SIRR line principally for containers, the idea of completing a rail line across the Arthur Kill waterway was also supported by the petroleum and chemical industries (Baldwin 1998). In 1999, the NYEDC envisioned expanding the Howland Hook terminal from 180 acres to 430 acres (McLaughlin 1999). Yet, these ambitious plans relied partly on the ability of the

surrounding region to improve landside connections. The planned construction of a twin bridge to replace the Goethals Bridge stalled. In the discussion of area improvements, freight issues were often given only sporadic treatment. ‘‘We are also an agency charged with (expediting) the movement of goods,” and “There’s too much focus on cars,” stated the Director of Tunnels, Bridges, and Terminals for the Port Authority of NY/NJ (Frank 1999).

In 1999, the beginning of a year-long feud between Governors Pataki (New York) and Whitman (New Jersey) had increasingly serious implications for the future of the Howland Hook terminal and the SIRR. Governor Whitman had supported the rail plan over the objections of Union County officials. However, this state-level support was tenuous in the wake of a broader disagreement on revenue sharing. In June of 2000, the governors called an end to the 17-month feud and cleared the way for delayed capital projects to proceed, including the Howland Hook expansion and the completion of the SIRR (Engineering News-Record 2000). In 2001, the Port Authority purchased land to expand the Howland Hook terminal—a 124-acre factory complex that had been formerly operated by Proctor and Gamble until being shuttered in 1991. Proctor and Gamble had been a customer on the previous incarnation of the SIRR and its departure was one factor that led to abandonment of service. The Port purchased the land for $46.8 million. The facility, known as Port Ivory, since it formerly produced Ivory soap, required substantial environmental remediation. It was also envisioned as a dredge disposal site for the terminal’s required maintenance dredging activities (Lloyd’s List International 2002).

As early as 2001, the major elements of the plan that would eventually restore service over the line were in place. As terminal President Ragucci described:

> [A] major part of the Port Ivory development is expected to be an on-dock rail terminal. The port authority also is doing engineering work for an improved rail link between Howland Hook and the “Chemical Coast” line, which is operated by CSX Transportation and Norfolk Southern. Construction of a new connection from a bridge across the Arthur Kill to the line would eliminate many grade crossings for trains moving between Howland Hook and the three Class 1 railroads serving the port: CSX, NS and Canadian Pacific (Dupin 2001).

In 2002, following a period of inactivity in the aftermath of the 9/11 attacks, new terminal President Jim Devine rededicated efforts to completing its landside improvements. At the time, the terminal was reported to be “heavily subsidizing drayage to and from its facility at considerable expense to its bottom line” (Lloyd’s List International 2002). Recognizing that intermodal service originating from the terminal was insufficient to drive the completion of the SIRR project, Mr. Devine pushed for the combination of port intermodal shipments with solid waste transfer operations in order to create a critical mass of cargo volume. In October 2002, the terminal broke ground on a $350 million terminal expansion that included the designation of the former Proctor and Gamble parcel for use as a $70 million on-dock rail facility (Journal of Commerce Online 2002). Furthermore, a decision in July 2002 by the Surface Transportation Board granted permission to the Morristown & Erie Railroad to operate as a common carrier along the Rahway Valley and Staten Island rail lines. The decision also granted the use of the

county-owned rail lines as a through service for interstate carriers (Journal of Commerce Online 2004).

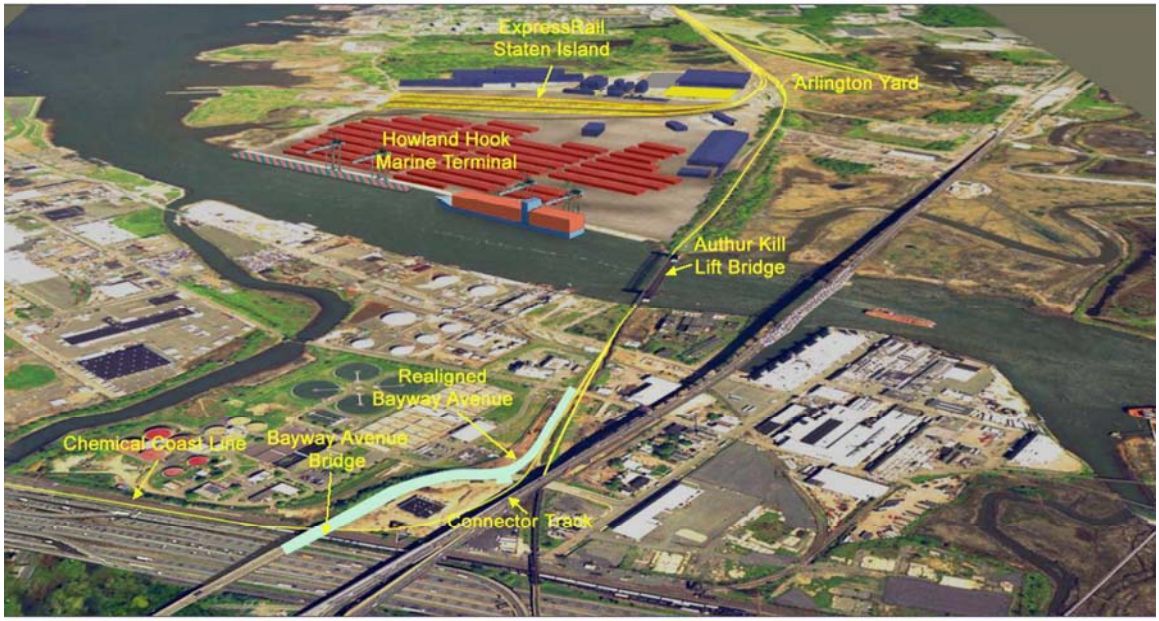
In 2004, the Howland Hook terminal was renamed the New York Container Terminal (NYCT), and was officially reopened with this new title on January 1, 2005. Later in 2005, the long-discussed ship-to-rail transfer facility broke ground with the intention of reestablishing container service, as well as serving as Mayor Bloomberg's preferred alternative for shipping solid waste out of New York City by rail. The project, though long on the books, was incorporated along with a broader $450 million dollar master plan to bring on-dock rail to every Port of NY/NJ container terminal. When completed, the major elements of the project included: the rehabilitation of the Arthur Kill lift bridge; the restoration and expansion of the Arlington Yard; the expansion of connecting tunnels to the terminal to accommodate double stack trains; new track to connect the NYCT to the bridge over the Kill van Kull, and then, via the Chemical Coast Connector, to the national rail network in New Jersey (Engquist and Fernandez 2006).

Chemical Coast Connector

The configuration of the rail corridor on the Staten Island side was retained as it had been prior to abandonment. On the New Jersey side, however, modifications to the alignment of the corridor were required. The decision to route traffic via the Chemical Coast was made for a number of reasons. First, the original connector to the Lehigh line had been removed. Second, a new connection along the heavily industrial Chemical Coast would allow the rail line to avoid congestion impacts from at-grade rail crossings, as the new alignment "replaces a previous track connection that ran through highly populated residential areas and had several problematic at-grade road crossings" (Port of New York and New Jersey 2007). The Chemical Coast Connector, thus, served as a key element of mitigation to prevent restoration of freight service from causing community complaints (Port of New York and New Jersey 2007). The line also allowed the new ExpressRail terminal at Howland Hook to connect with another terminal located in Elizabeth, New Jersey. Plans to construct the connector, which had long been on the drawing board, were sped up in the late 1990's due to the acceleration of cargo growth. According to Mr. Lotz, the Port Authority board authorized the project in June of 2000 and purchased several acres of land to build the connector.

In addition to lowering the community impact of rail service, the Chemical Coast Connector project was intended to improve the efficiency of the line by reducing maintenance costs. Modifications to the line were made in order to allow for double stack trains, particularly in the area around Bayway Avenue. The project involved demolition and construction of a new vehicular bridge over Bayway Avenue, two rail bridges (Amboy Avenue and South Front Street), construction of three retaining walls, and railroad embankments (Phair 2006). The construction costs associated with the New Jersey track modifications were estimated at $57 million. Figure B-2 (Port of New York and New Jersey 2007) shows the Chemical Coast Connector project.

FIGURE B-2
SIRR CHEMICAL COAST CONNECTOR PROJECT



On October 4, 2006, the STB granted Norfolk Southern and CSX Transportation an exemption for the joint use and joint rail freight transportation-related services over 7.69 miles of abandoned rail line of the former Staten Island Railway Corporation in New York and New Jersey, lying generally between the Conrail Chemical Coast Line and points on Staten Island, NY. This exemption, which was strongly supported in comments by Mayor Bloomberg, was seen as the last legal hurdle for re-activation of the line. In 2007, the deepening of the Arthur Kill waterway to 41 feet meant that the NYCT could begin handling larger ships. Rehabilitation of the Arthur Kill lift bridge was a major factor in re-establishing the viability of the corridor. On April 2, 2007, the first shipment to use the rehabilitated track—a train carrying solid waste—successfully moved between the Department of Sanitation's Staten Island Transfer Facility and New Jersey. Up to this point, $160 million had been spent on rail improvements on both sides of the bridge—a figure that dwarfed the original amount paid for the abandoned line in 1994. Mayor Bloomberg officially reactivated the line on April 17, 2007. Along with the completion of the track rehabilitation, the Port of NY/NJ completed the ship-to-rail container transfer station, called ExpressRail Staten Island, at a cost of $26 million (Port Authority of New York and New Jersey 2009b). Given that the Port of NY/NJ has now committed to leasing the Howland Hook terminal from the City of New York through the year 2058, this corridor will factor into the long-term future of intermodal development on Staten Island.

Conclusions and Implications

The reestablishment of the Staten Island Railroad was a long and uneven process that was tied closely to the death and rebirth of Staten Island's lone container terminal at Howland Hook. The New York Container Terminal is one of the largest employers on Staten Island. Poor rail access hindered the ability of the terminal to expand and secure its long term viability in a highly competitive market. These conditions, combined with the clear potential traffic reduction benefits in a bridge-dependent region, drove support from the population to improve the competitiveness of the Port and remove port-related truck traffic by shifting it to rail (Port Authority of New York and New Jersey 2007).

The project was managed by the NYEDC, which sought a third party operator that would allow both CSX and Norfolk Southern to utilize the line. According to Ms. Cheng, this was an arrangement that had been successfully used with Conrail.

Aside from the issues of funding and construction, there were several accommodations needed to restart service on the line after freight traffic had been discontinued for so long. For example, there were several grade crossings that were seen as a potential problem if the railroad traffic volume increased. The surrounding population had gotten used to not having the railroad active and had assumed it would not be resuscitated. To minimize the potential disruptions from grade crossings through densely populated areas, the "Chemical Coast Connector" was constructed in order to link the SIRR line to the Conrail line in Elizabeth, New Jersey. According to Ms. Cheng, CSX conducted a significant public information campaign to notify the public of the resumption of rail service, even including outreach to the schools to ensure that children did not play in the right-of-way. About six months prior to reactivation, CSX and the NYEDC started a public information campaign to ensure that the population knew service was about to resume.

Figure B-3 (Port Authority of New York and New Jersey 2007) shows the reactivated SIRR.

FIGURE B-3
REACTIVATED SIRR – CHEMICAL COAST CONNECTOR TO HOWLAND HOOK MARINE TERMINAL



One unique factor that allowed the SIRR project to be realized was the existence of proactive inventory and acquisition policies in both states. In the 1980s, there were a slew of abandoned ROWs in New Jersey that were being sold off. New Jersey decided to create a fund to help the State to preserve them. According to Mr. Matthews, the New Jersey Legislature set aside $25 million for the preservation of rail ROWs. Along with the appropriation, six specific lines that the Legislature wanted preserved were identified. The SIRR was one of those lines. When the appropriation was passed, the CSX was already in the process of abandoning the line, and had already filed to abandon when the money was made available. The State had to wait for the abandonment to be approved.

There were two parties involved in the abandonment. One was the Susquehanna, which owned the SIRR assets including tracks and the lift bridge. The other was CSX, which owned the underlying real estate. The State of New Jersey acquired the real estate from CSX and the assets from Susquehanna, though almost all of the value was in the real estate. All of the property was held in fee-simple as opposed to under easement and, had the acquisition not gone forward, the CSX would likely have sold the land to adjoining land owners.

New Jersey officials were approached by representatives of Union County, which sought to reactivate the railroad as part of their efforts to retain or restore an industrial orientation for the County. That would mean that the State of New Jersey would not have to maintain the facility.

However, the interests of Union county would become an issue of contention later on in the process after it became clear that the Class I's would use the corridor to connect to major intermodal corridors as opposed to providing local service.

Some updates to the facility had to be made to convert it from a line that was capable of handling bulk trains to one that was able to handle double-stack intermodal trains. In addition to reactivating the Arlington yard, a branch line called the Travis Branch, which led to the former Fresh Kills landfill, was also restored. The NY/NJ Port Authority not only put significant investment into the connection to the Chemical Coast line, but also established a new rail authority subsidiary so it could operate or lease the operation to a carrier. CSX is the only company that is currently operating trains on the line—one intermodal train a day. NS has the right to operate but has not started.

Vertical encroachment was an issue where the SIRR interchanged with the Lehigh Valley Railroad in New Jersey. A truss bridge had an overhead clearance issue for double-stack. Susquehanna owned the bridge and resolved the issue by the time the State acquired the line. According to the M&E Railroad, vertical clearance was no longer an issue once the Port Authority built the connection to the Chemical Coast that avoided the truss bridge altogether. Although the Chemical Coast connection has allowed the SIRR to access the Class I system, it has still not restored the full connectivity that existed at the time of the line's original abandonment.

The State of New Jersey's right of first refusal is a law that goes back to the 1950s. According to law, a railroad had to file its intent to abandon with the State at the same time that it filed with the ICC. When the State receives the intent to abandon, it has 120 days to inform the railroad that it plans to exercise its right to acquire the line. In the case of the SIRR, the railroad knew prior to filing for abandonment that the State had a long-standing interest in acquiring the property. The Molinari federal earmark that was secured contributed to the state's $25 million authorized for rail corridor acquisition. The initial purchase included all of the land and some of the assets. The Arthur Kill lift bridge was not acquired by the State of New Jersey as it was acquired directly by New York City. Following this project, there have been no other corridor acquisition projects by the State of New Jersey. Furthermore, the fund for acquiring corridors has been exhausted. Therefore, if another opportunity to acquire a corridor presented itself, a new funding source would need to be identified.

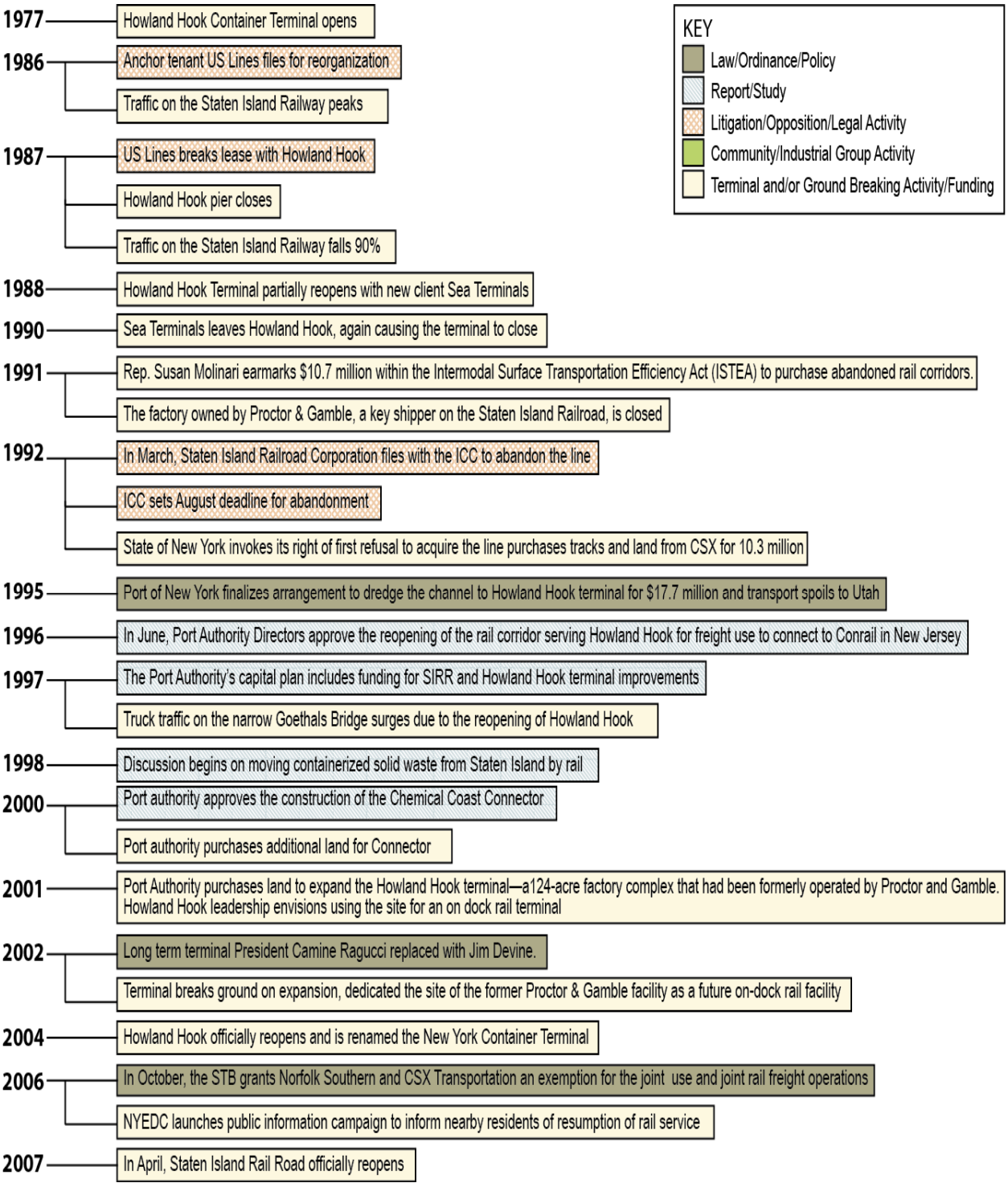
The State of New Jersey does not actively monitor traffic on existing rail corridors to see which ones might be likely candidates for abandonment. However, it has performed surveys of abandoned corridors to see which of them have encroachment issues that would prevent future rail use. After completing its assessment of corridors, the State of New Jersey put forward a general recommendation to prevent future encroachment of corridors to allow for the possibility of future use either for rail transit or freight. However, it did not go so far as to recommend a specific funding source for any future acquisitions.

At the NYCT, the rail access provided by the SIRR has provided the terminal with an element of resiliency, even in the midst of a historic falloff in cargo volume. Even as total TEU volumes at the terminal have fallen, rail traffic has continued to be robust due to a modal shift from truck to rail to serve the terminal's preexisting out-of-state customer base. The terminal is upgrading its equipment, and currently has rubber-tired gantries on order to improve container handling efficiency. The Port of New York stated that NYCT would likely not be proceeding with their

terminal expansion program (“Berth 4”) without the availability of double-stack rail since intermodal is a “given” for any major marine terminal development. The previous situation—in which any containers moving by rail had to be trucked over the Goethals Bridge to terminals in New Jersey—was described by Mr. Lotz as “costly” and “not a sustainable arrangement.” The ExpressRail facility is still undergoing expansion and is expected to be fully built out by 2013. According to Kevin Gillespie, Chief Clerk of NYCT ExpressRail, with the ship-to-rail system, NYCT can move boxes off the terminal within 48 hours of arrival. Without a viable on-dock rail system, the small terminal on Staten Island would have a difficult time competing with the far larger and more heavily capitalized terminals in New Jersey. The SIRR theoretically allows the NYCT to market its services to almost any customer on the East Coast or Midwest. In addition, the Staten Island waste transfer station has signed a 20-year agreement to ship waste in sealed containers by rail to South Carolina, making this cargo perhaps the most reliable future use of the SIRR.

Figure B-4 provides a timeline of the SIRR rehabilitation.

FIGURE B-4
SIRR TIMELINE



APPENDIX C

CASE STUDY: BALTIMORE MARITIME INDUSTRIAL ZONING OVERLAY DISTRICT

Introduction

This case study documents the history and relevance of a unique planning tool called the Maritime Industrial Zoning Overlay District (MIZOD) that has been employed at the Port of Baltimore to balance industrial and non-industrial development. The creation of the Maritime Industrial Zoning Overlay District was, above all else, an attempt to slow down the redevelopment of certain Port facilities from industrial to non-industrial use in order to see more clearly whether the economic trends that were driving this redevelopment were, in fact, permanent. If the industrial functions of the Port of Baltimore were truly of the past, then no zoning policy would be capable of saving them. When the MIZOD was passed in 2004, the Port and City government argued that such conclusions could more confidently be drawn when the MIZOD was originally set to expire in 2014.

The MIZOD was created by the City of Baltimore to protect frontage land along the harbor that had harbor access of at least 18 feet of draft. The overlay was carefully crafted to preserve the most vulnerable and critical areas of deep water frontage for current and future freight use. While controversial at the time of passage, the MIZOD has emerged as an effective planning tool, and was most prominently endorsed when a 10-year extension of the original authorization was approved in 2009 that solidified the status of the MIZOD through 2024 (Basu 2009). Furthermore, the MIZOD is being considered as a potential planning tool by other ports seeking to prevent encroachment of their industrial lands. The Port of Providence is given as an example of a port that may develop an overlay zone as a direct outgrowth of the Baltimore MIZOD.

In order to learn more about how the MIZOD evolved and the role it plays in both the City and Port's planning efforts, the researchers reviewed previous analyses, conducted several phone interviews with Port and private sector representatives, and held meetings in Baltimore with the Port and the City Planning Office.

Context

Perhaps nowhere else in the United States is the history of a city more intertwined with the history of a port than in Baltimore. The evolution of the Port of Baltimore along with the City of Baltimore has seen the orientation of the Port frequently change to serve the evolving needs of the City and the larger community. The Port was created in 1706, prior to the establishment of the City of Baltimore, and in the course of their mutual history, the Port has seen its layout altered many times in service of the City, major shippers, and the U.S. military.

The Port of Baltimore is run directly by the Maryland DOT and the State of Maryland. As a result, the State has a more direct role in port planning than is the case for ports in other states, the vast majority of which are governed by port authorities. In total, the Maryland Port Administration controls seven terminals, which handle the majority of the tonnage at the Port (mostly containers), although there are several private terminals that specialize in different cargo

types. In a July 26, 2010 interview, James Dwyer of the Maryland Port Administration said that the State of Maryland has invested more than $700 million in the Port of Baltimore over the last decade and, therefore, has a strong vested interest in seeing the Port remain viable well into the future. Furthermore, the Port of Baltimore is the only large port within the State of Maryland, and is of critical importance for supplying consumer goods to Maryland and the greater Washington, DC area.

Until recently, the Port's historical function involved primarily the shipment of domestic cargoes. The geography of Chesapeake Bay, in particular the Patapsco River, limited the ability of shippers in the first half of the twentieth century to ship overland. For this reason, domestic shipments of all types of goods by water from the Port of Baltimore remained an important business even after other areas of the country had switched to rail or truck deliveries.

The completion of the Harbor tunnel and related improvements in the late 1950s and early 1960s meant that most of the domestic shipping operations by water were no longer necessary. For this reason, the Port of Baltimore no longer had a significant need for the shallow water inner harbor docks and they consequently fell into disuse. There was widespread support among almost all parties within the Baltimore area that some redevelopment and conversion to alternative uses was necessary. The establishment of the Baltimore Convention Center, which opened in 1979, was seen as the first serious attempt to redirect the abandoned warehouse areas of the inner harbor to a tourist destination. Given the unsustainably low tax base and general underutilization of the inner harbor area, the efforts to create a functional tourist and commercial center were broadly supported by multiple parties, including Port officials.

For many years, the redevelopment of the inner docks and some defunct facilities in proximity to the deepwater access channels was supported, or at least not actively opposed, by the Port. For example, the Port of Baltimore administration, was involved in one of the early efforts to revitalize the inner harbor area—the Baltimore World Trade Center. Some Port tenants point out that the amenities offered by the City in the redeveloped areas, many of which are in the inner harbor area, are a key factor that has allowed them to hire and retain talented employees (Michael 2006). Therefore, Port tenants benefit indirectly from the redevelopment of the inner harbor.

Recent History

With the rapid growth of international trade in the mid-1990s, it was unclear what role the Port of Baltimore would be able to play in the new economy. However, it was becoming clear that the Port had limited ability to grow and, therefore, limited ability to respond to new economic conditions. Existing facilities were feeling the strain from additional land redevelopment that was now beyond the historical inner harbor area and encroaching on land that, while not actively being used for freight activity, still had the potential for serving a freight role in the future. Furthermore, existing freight operators noted the importance of having a buffer zone between freight and non-freight uses, particularly for operations such as the Rukert dry bulk terminals, which produce dust within a small radius. One terminal tenant, MAPC, moved to Baltimore, in part, to avoid waterfront conflicts at their former location at Annapolis (Michael 2006).

What is different about the Port's shifting land use in the last three decades is not the fact that the balance of industrial and non-industrial land is changing, but rather that the pace at which it is changing was viewed as unsustainable. The decline of certain industries that had historically

occupied Baltimore terminals, combined with a boom in residential and commercial real estate, threatened to swallow so much land that it appeared the Port would be driven toward a few specialized activities, such as container handling and roll on/roll off cargoes, and away from its traditional bulk cargo and manufacturing base. While intermodal terminals are very efficient, this efficiency means they do not directly create as many blue collar jobs when compared with manufacturing plants.

As a general rule, the private marine terminals at the Port of Baltimore are more directly affected by encroachment of non-freight development than the public terminals. This is due to their location in proximity to residential and commercial areas, and the fact that the use of the state-controlled terminals cannot be converted without legislation. Each terminal operator, however, recognizes that a critical mass of industrial facilities is necessary for all terminals to thrive. The private terminals, several of which border the (generally larger) public terminals, provide an important buffer for the public terminals' operations. In addition, the combined tonnage produced by all terminals is considered by the USACE in making determinations on channel maintenance prioritization, and losing terminals to redevelopment can have a negative effect on that prioritization process.

The Creation of the MIZOD

The Governor of Maryland created a task force to examine strategies for making better use of the Port-controlled lands. The results of this examination documented the fact that the Port did not have much room to grow and, given the rate at which former industrial lands were redeveloping, had a significant challenge in remaining viable into the future. Unlike some other deepwater ports along the East coast, the Port of Baltimore did not have any nearby military facilities scheduled for closure or any other logical areas that could be converted to future industrial use. Therefore, City and State planners knew that if the existing assets at the Port were not preserved, the Port had no other alternatives but to shrink in size and in scope.

Regulations on dredge disposal create another factor that complicates the Port of Baltimore's ability to expand. While the Port has some areas that could serve as new industrial sites, providing deep water access to these facilities would require massive new capital dredging projects that would produce far more dredge material than the Port could economically dispose of. Dredge material from the Baltimore harbor is generally deemed hazardous material, and as such, the Port is barred from disposing of the material out of state. The Port estimates that it has ten years of capacity to dispose of dredge material from its current channel maintenance operations, and a new capital dredging project would overwhelm the Port's existing dredge disposal areas. Constraints on future dredging present another compelling reason to ensure that tenants with deep water access actually utilize the water for freight purposes.

While the State of Maryland controls the finance questions, it is up to the City to set zoning policy and regulate land uses in the Port area. Although the Port was consulted in the development of the overlay, it was designed primarily by the City of Baltimore in conjunction with third parties, such as the Baltimore Development Corporation. The majority of pushback that occurred when the ordinance was passed came from landowners who had recently acquired land near the Port in the hopes of constructing non-industrial uses such as restaurants.

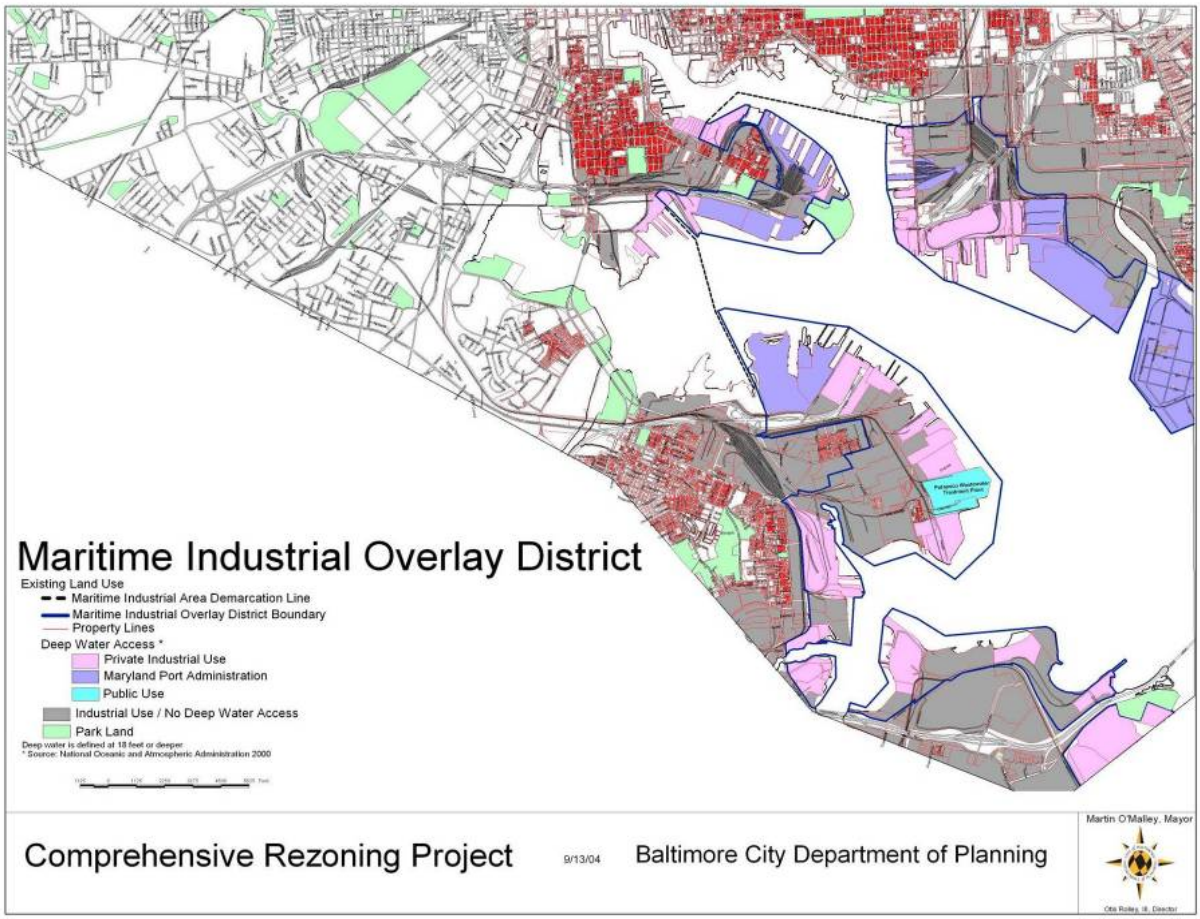
How the MIZOD Functions

The MIZOD is an overlay zone that is meant to protect deep water access, and industrial operations serving and depending on that access. It prohibits non-industrial uses from developing within the overlay zone. The primary zoning for the area is designated as heavy industrial, with the overlay preventing PUDs, entertainment venues and taverns, and non-accessory-use commercial development (hotel, restaurant, office, etc.) from developing (Broadwater 2009).

The boundaries of the MIZOD were established to encompass those areas where there is access to at least 18 feet of draft. Because the draft becomes shallower closer to the downtown, those properties that had the most attractive profile for urban redevelopment were least attractive for industry. The MIZOD was designed to protect those facilities that are still viable for industry. The boundaries of the MIZOD are shown on Figure C-1 (City of Baltimore, Planning Department 2004).

The MIZOD was set to expire in 2014, but businesses within the MIZOD were having difficulty securing financing for projects that would bump up against or go beyond that sunset date. In March 2009, the City Council's Land Use and Transportation Committee passed an amendment that extended MIZOD for another 10 years to 2024. Landowners who wish to opt out of the MIZOD may leave during the renewal period in 2014. Given the fact that most of the landowners within the overlay zone currently use the land for freight purposes, the Port does not expect significant attrition in 2014. In addition to extending the authority for the MIZOD, the City Council also took steps to expand its scope to other areas of the City. The Baltimore Industrial Group, whose members include businesses that lobbied for passage, supported this extension and expanded scope.

FIGURE C-1
MAP OF MIZOD AREA



Impacts of the MIZOD on Industry and the Economy

Domino Sugar is often cited as a major tenant that might have abandoned the Port had the MIZOD not been created. Given that the Domino Sugar sign is an iconic image clearly visible from the inner harbor, MIZOD advocates have used this image to represent the ability of industrial and non-industrial uses to thrive within a confined area if proper policies are set. Prior to the establishment of the MIZOD, the encroachment of non-industrial uses was making it more difficult for Domino Sugar to continue its operations. The plant engaged in several mitigation activities aimed at lowering the impact of operations on surrounding neighborhoods, such as noise reduction. While Domino agreed to finance some of these efforts, it could not do it repeatedly if no action was taken to officially designate the area as an industrial zone. The establishment of the MIZOD and the greater certainty it created not only allowed Domino Sugar to stay in Baltimore, but the Port received a substantial infusion of new business following Hurricane Katrina as much of the sugar industry that had been based in the New Orleans area migrated to Baltimore.

Figure C-2 (Hutson 2010) shows the Domino Sugar sign as seen from the inner harbor.

FIGURE C-2
DOMINO SUGAR SIGN AS SEEN FROM THE INNER HARBOR IN CLOSE PROXIMITY TO A RECREATIONAL MARINA



While there is a consensus that the MIZOD has been good for the Port and Port users, in order to remain, it must also be shown to benefit the City as a whole. Significant efforts have been undertaken to document the effects of the MIZOD since its initial passage. As a baseline, the Port hired Martin and Associates in 2006 to perform a study of the Port's economic impact. The study estimated that 50,200 jobs in Maryland were directly or indirectly sustained by Port activity. Of these, 16,500 were direct jobs. Another key finding of this 2006 study was that, of the direct jobs, the majority were generated by the private terminals, which are seen to be the biggest beneficiaries of the MIZOD. The private terminals accounted for 9,718 direct jobs in 2006 (Martin and Associates 2008).

According to Mr. Dwyer, the number of jobs is important, but what is equally important is the type of jobs that are sustained. It is important for the City to provide opportunities for individuals who want to work, but have neither the specialized skills offered through a college education nor the years of training required to enter the pool of skilled unionized port workers. Manufacturing at the various industrial plants supported by the MIZOD provides this opportunity. For the first half of 2010, Baltimore has managed to keep its unemployment rate below 8 percent at a time when the nationwide average was almost 2 points higher (Metropolitan Area Employment and Unemployment (Monthly) News Release 2010).

In early 2009, a report that looked specifically at employment and revenue impacts of the MIZOD was published. The report, entitled "An Economic Impact Assessment of the MIZOD in

Baltimore" was released in February 2009 (Basu 2009). The principal goal of the analysis was to test the theory that redeveloping certain portions of the City from industrial to mixed use would be beneficial, from a tax base perspective, for the City. The analysis determined that the continued use of industrial land for Port-based activities was more likely to be in the long-term interest of the City. While there was a tax base benefit due to the waterfront premium that could be offered by redeveloping industrial land as mixed use, this was not substantial enough to make up for the lost economic benefits from losing industrial land. The analysis found that there were many suitable substitute locations for attractive mixed use development within the urban area. However, there were essentially no substitutes for the deep water frontage preserved by the MIZOD:

> In other words, the public policy choice is not between choosing mixed use development over industrial operations or vice versa. Rather, the public policy decision revolved around whether to not development that need not be on the water be permitted to displace economic activity that must be on the water (Basu 2009).

The report noted that benefits did accrue from the placement of mixed use developments on the water. However, these benefits were not sufficient to make up for the displacement of industrial uses. While high-intensity mixed use was found to support more total economic activity, port-related activities created more jobs and the jobs created are more likely to be full time and pay higher hourly rates. Finally, the report commented on some of the strategic reasons for retaining Port and industrial facilities. These include the number of businesses and industries that rely on Port activity, and the uncertain (and likely declining) value of premium housing, such as waterfront condos, to drive the local tax base.

Ordinance Structure

Communicating the importance of deep water access has been one of the most challenging aspects of the public outreach effort. The City of Baltimore has many areas where defunct former industrial space is being redeveloped into higher-value use, with the City's full support. City residents are often confused as to why some industrial facilities that look very similar to MIZOD properties are eligible for redevelopment while facilities within the MIZOD are not. Thus, planners have to clearly differentiate between deepwater access facilities that are in short supply, and general industrial lands that have fallen into disuse and will likely not be rehabilitated because they do not meet the space criteria for modern distribution centers.

Although the overlay protects against non-industrial uses intruding upon valuable and limited deep water accessible land, the overlay does not prevent non-maritime industrial uses from locating within the MIZOD. This is one of the core criticisms of an analysis done by the Regional Economic Studies Institute (RESI) of Towson University (Hentschel and Irani 2009). Other criticisms from the report include:

- The lack of protection for transportation networks that provide access to Port operations
- The absence of buffer development and conflict resolution measures between the MIZOD area and incompatible land uses that border the overlay zone
- The future land speculation that could arise due to the sunset nature of the MIZOD

The last concern has been alleviated somewhat by the extension of the MIZOD to 2024, and could be further mitigated if a permanent maritime industrial zone district is developed.

Future Plans

The City of Baltimore is currently creating a new comprehensive plan called Transform Baltimore. Although the comprehensive plan is currently in the development stages, some preliminary content is up for public review. Specifically of interest is a new zoning district designation, which would likely replace the MIZOD in favor of an actual zoning district for maritime industrial use rather than using an overlay on top of heavy industrial zoning. This would eliminate the issues surrounding the sunset nature of MIZOD and provide better focus for preserving land for only port and maritime industrial use. The preliminary code outline also states that buffering will somehow be incorporated into the zoning structure in order to address conflicting land uses bordering the industrial maritime zone.

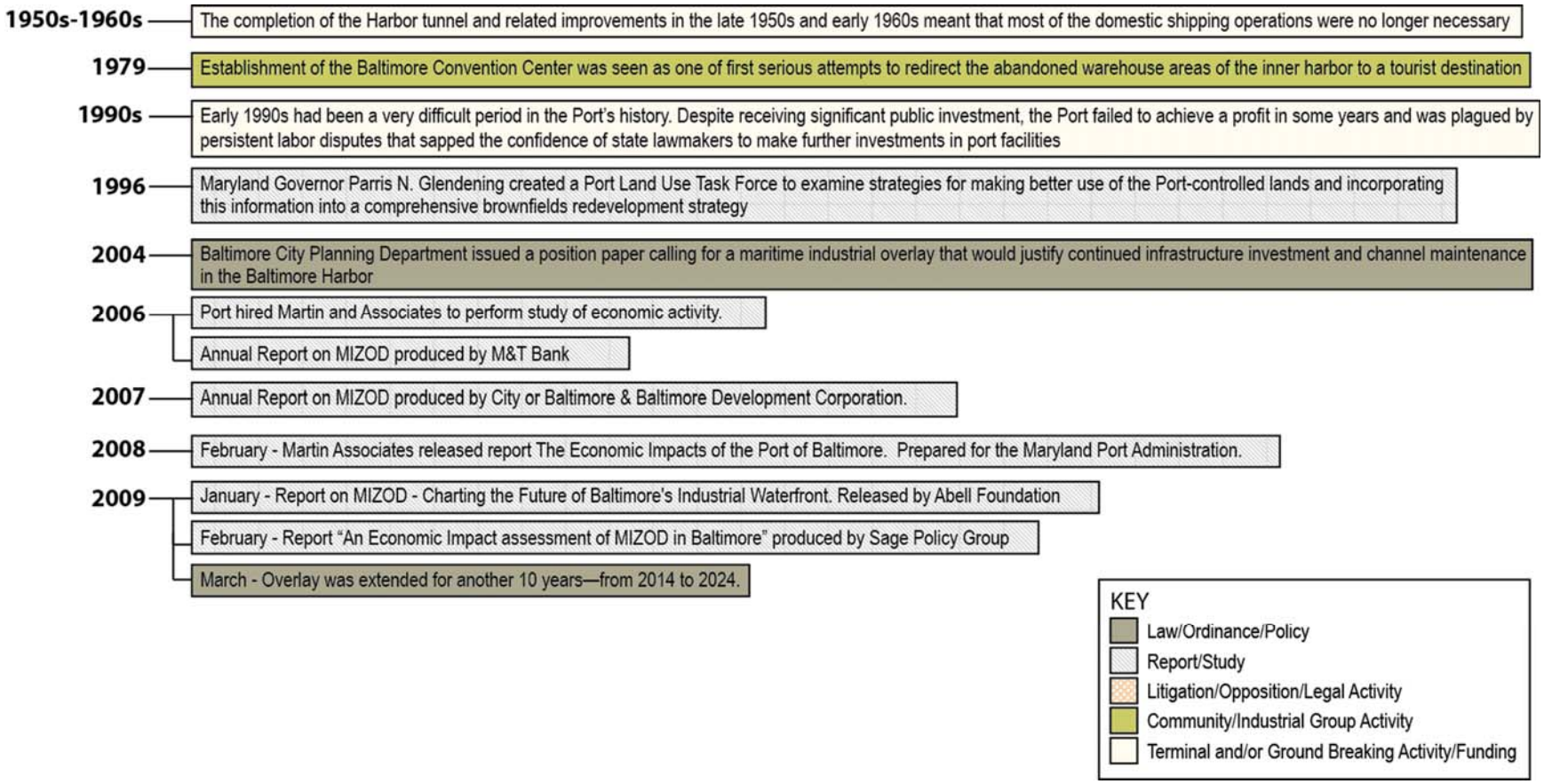
Transferability

Beyond the economics of the Baltimore area, another question that has emerged regarding the potential benefits of the MIZOD is the extent to which the efforts taken in Baltimore can be transferred to other locations. If the MIZOD proves to be a unique feature of one port, then its future research value is limited. In fact, the planners who helped design the MIZOD indicated that not every port would be able to duplicate the arrangement that was established in Baltimore due to the historical and economic factors that drove its adoption within the Baltimore area.

However, the researchers also found that the MIZOD is already being used a model for some other ports that are dealing with encroachment issues. The Port of Providence in Rhode Island is the most recent example. In the industrial Port of Providence, there has been a recent attempt to build a hospital and hotel complex that would require rezoning a 346-acre area in South Providence (Marcelo 2010b). The construction of the hospital complex would require substantial environmental remediation. The project is supported by Providence's mayor, but opposed by the privately-run port. The mayor's plan would retain some land for continued port use but would allow "non-water dependent and non-industrial uses in a 62-acre section of the waterfront nearest the downtown, opening the door for restaurants, bars, hotels, marinas and more" (Marcelo 2010a). The Port of Providence has requested that the Maryland Port Authority advise them on strategies for preserving the waterfront and has requested that Maryland Port Authority officials testify at a zoning hearing about the potential hazards of incompatible waterfront development. The Maryland Port Authority has also been asked to help the City of Providence develop a zoning policy that would provide opportunities for development without compromising the port's core function or setting up a situation that would lead to inevitable conflict.

Figure C-3 provides a timeline of events for MIZOD.

FIGURE C-3
MIZOD TIMELINE



APPENDIX D

CASE STUDY: GUILD'S LAKE INDUSTRIAL SANCTUARY

Introduction

The Portland Harbor runs along twelve miles of the Willamette River and two miles of the Columbia River. The Portland area features both Union Pacific and BNSF rail lines, as well as four rail yards and several short line railroads.

The 2006 Portland Freight Master Plan (Freight Master Plan) estimated that there are 12,500 acres of industrial land in and around the Portland Harbor and Portland International Airport (City of Portland Office of Transportation 2006). The Freight Master Plan states that the percentage of the Portland region population engaged in freight employment is much higher than average and, furthermore, the rate of growth in industrial-oriented jobs was found to be higher than the national average, with a 37 percent increase in industrial employment since 1980. The Freight Master Plan projects an average growth in freight tonnage for Portland of 2.1 percent per year through 2030. The highest rate of growth is expected to be for air cargo, with lower growth rates for deepwater marine and barge traffic.

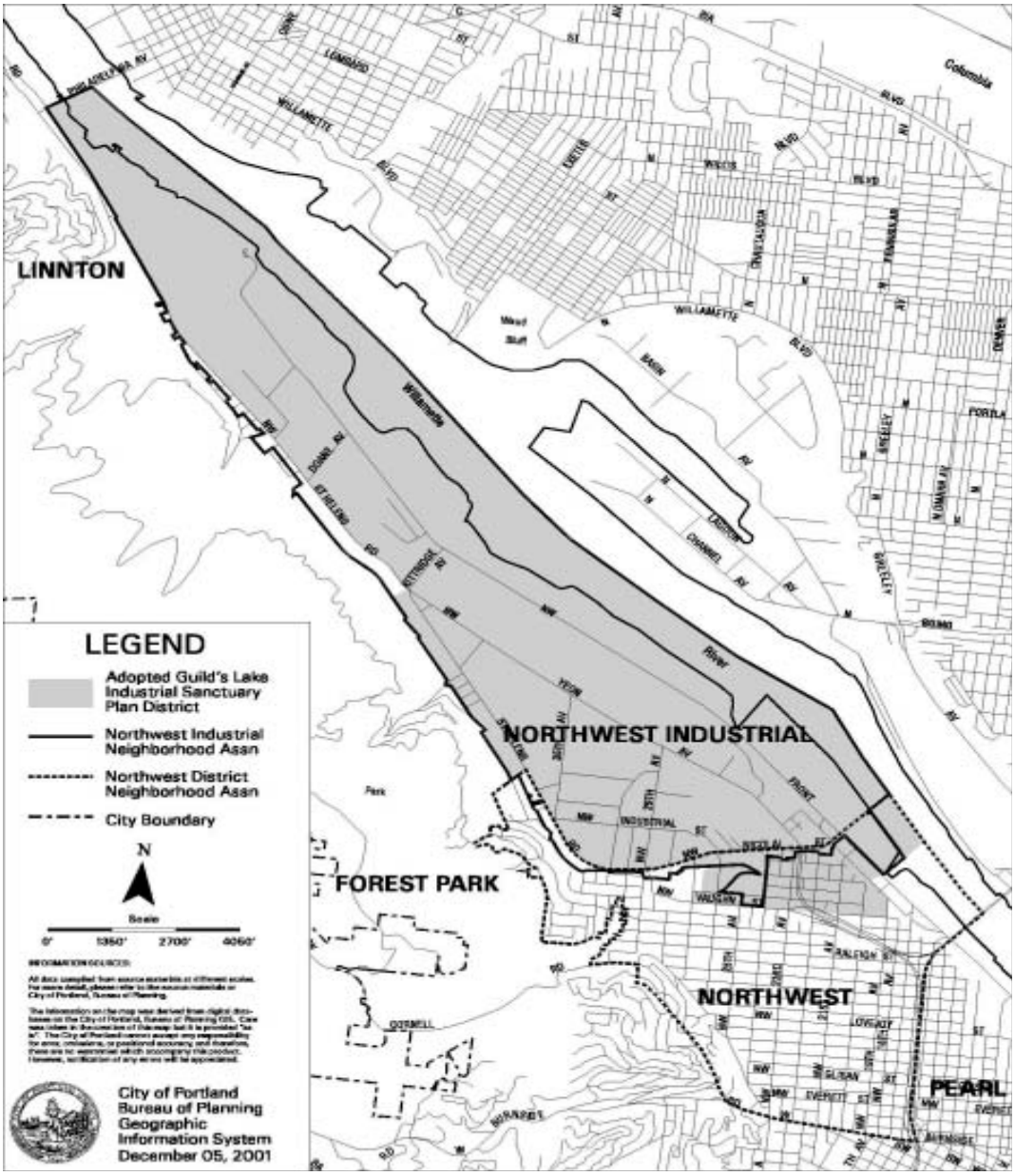
To help Portland residents and outside observers better understand the role that industrial land plays in the Portland economy, the City developed an Industrial Atlas in 2004 that subdivided the City into industrial districts. The Guild's Lake Industrial Sanctuary is a key component of one of these districts, the Northwest Industrial District.

On December 14, 2001, the Portland City Council voted unanimously to adopt the Guild's Lake Industrial Sanctuary Plan (GLIS). Ordinance 177920, which adopted GLIS, formally amended Portland's comprehensive plan and integrated action plan items to ensure the continued development and support of GLIS. Portland has had an *Industrial Sanctuary Policy* in its comprehensive plan since 1980. This policy has helped to maintain approximately 14,000 acres of land in the City zoned for heavy industrial uses (Zoning Code: IG).

GLIS and Portland's Northwest Industrial District

GLIS is located between Forest Park in the West Hills and the Willamette River (See Figure D-1 (City of Portland Bureau of Planning 2001, 2)). GLIS contains the majority of industrially-zoned land in Northwest Portland (City of Portland Bureau of Planning 2001). The Northwest Industrial District, which is estimated at 1,700 acres, is largely coterminous with the Guild's Lake Industrial Sanctuary. It also includes the smaller Linnton industrial area. In total, the Northwest Industrial District constitutes 11 percent of total industrial land within the Portland area. Within the district, 41 percent of the land area has harbor access and 67 percent has rail access (City of Portland Bureau of Planning 2004). This gives the Northwest Industrial District the highest percentage of land with rail access of any industrial district within the city. It should be noted, however, that access to a freight mode does not always mean that an occupant utilizes this mode.

FIGURE D-1
GUILD'S LAKE INDUSTRIAL SANCTUARY



The Northwest Industrial District is also responsible for 15 percent of the total industrial jobs in the City. At the time the Industrial Atlas was published in 2004, 15,594 jobs were attributed to the Northwest Industrial District, of which, 44 percent were manufacturing and 28 percent were distribution (Portland Online Webportal).

GLIS is intended to preserve and enhance industrial land in the area bounded by Vaughn Street on the south, the St. Johns Bridge on the north, Highway 30 on the west, and the Willamette River on the east. GLIS is 1,625 acres in size. Of this total, 220 acres are devoted to rights-of-way. Over 89 percent of the area (excluding rights-of-way) is devoted to industrial uses (see Table D-1 (City of Portland Bureau of Planning 2001, 16)). Twelve percent of the area is devoted to rail yards. Commercial uses (offices and retail) constitute just over two percent of the

area, and one-tenth of one percent is devoted to residential uses (which are primarily in the southern portion of the district).

TABLE D-1
LAND USE WITHIN GLIS

Land Use	Tax Lots	Square Feet	% of Lots	% of Area	Average Lot Size
Industrial	418	54,652,608	71.3	89.3	130,748
Vacant	41	2,756,599	7.0	4.5	67,234
Other (Rail Lines, Utility Corridors, etc.)	57	2,041,177	9.7	3.3	35,810
Commercial	34	1,259,797	5.8	2.1	37,053
Institutional	12	395,212	2.0	0.6	32,934
Residential	24	69,395	4.1	0.1	2,891
Total	**586**	**61,174,789**	**100**	**100**	**104,394**

Because of environmental factors, not all acreage classified as available industrial land is actually usable. The City of Portland estimates that 29 percent of industrial land is affected by environmental constraints.

Portland implemented an urban growth boundary (UGB) in 1980. An urban growth boundary is a regionally set boundary that is put in place to control growth, and often to control suburban sprawl. The urban growth boundary will be an officially adopted and mapped line that separates out and delineates the urbanized area rural or greenbelt open lands that often includes farms, parks and watersheds. The local government utilizes this to guide zoning and land use decisions. The boundary controls urban expansion onto farm and forest lands.

The success of the Portland area in maintaining its industrial land following the establishment of the UGB runs counter to the theory that a city deprived of the ability to spread out will cannibalize industrial land in order to create more space for residential growth. The UGB was developed as part of the state-wide land use planning program created by the Oregon State Legislature in 1973. The goals and guidelines of this program require every city and county in Oregon to have a long-range plan addressing future growth that meets both local and statewide goals. These goals require the setting of UGBs, using urban land wisely, and protecting natural resources (Portland Metro Region 2011).

The State of Oregon has also been actively reviewing how it would continue to effectively ensure that a steady supply of industrial land was made available for industrial development and redevelopment. In 2003, the Oregon State Legislature passed HB 2001 (Ch.800 OR Laws 2003), which mandated that the Department of Land Conservation and Development (LCDC) undertake a study of the state's industrial land supply. The governor convened the study committee in February 2003, calling it the Industrial Lands Task Force. It was tasked with addressing:

> [the]… perception that many of the fastest growing areas critical to Oregon's economy have not maintained an adequate supply of industrial lands to meet the needs of a growing and prosperous state (Oregon Industrial Conversion Study Committee 2004).

The committee found that conversion of industrial land to non-industrial uses occurs because of: zoning changes; the pattern of uses in multiple-use zones changes; and development of adjacent lands in a way that makes industrial use incompatible or unsustainable. The committee report

found that the state has an interest in discouraging conversions of prime industrial lands and in reinvesting in viable industrial districts, including those with brownfield sites (Oregon Industrial Conversion Study Committee 2004).

History of Guild's Lake

The area around Guild's Lake has a long and storied history. At the turn of the twentieth century, it was a swampy, flood-prone area that occupied 220 acres between the Willamette River and the northwestern foothills. The 1905 Lewis and Clark Centennial and American Pacific Exposition and Oriental Fair served as a catalyst in the development of Guild's Lake as an industrial area. After the exposition, the site became the target of land speculators. Interspersed with a few false starts and developer bankruptcies, the area was half-filled by 1913. By 1920, residents were living in Guild's Lake.

In 1919, the Portland City Council appointed a group of local businessmen to formulate a plan for development of the City's waterways, terminals, and industrial sites. The committee determined that the City needed "provision for ample and convenient site for industrial development" (City of Portland, Auditors Office 1921). They proposed that the City acquire "all of the low land in the so-called Guild's Lake District, lying between St. Helens Road and the Willamette River opposite Swan Island" (City of Portland, Auditors Office 1921). Voters declined to undertake this project, but the Port of Portland Commission purchased Swan Island in 1921.

In the interceding years, the land that would become GLIS was enhanced through deposits of dredge materials that filled in former low-lying areas and made the area more suitable for large-scale industrial development. The main shipping channel in the Willamette River was moved from the east to the west side of Swan Island. Manufacturing, distribution, and other industrial activity grew within the Guild's Lake area. Marine, rail, and highway investments were made by both public and private companies. The District is largely centered around BNSF's Lake Yard, which occupies approximately 140 acres. Gunderson Marine, now a subsidiary of Greenbriar Companies, is one of the District's oldest users, having been established in 1919 principally as a rail car manufacturer.

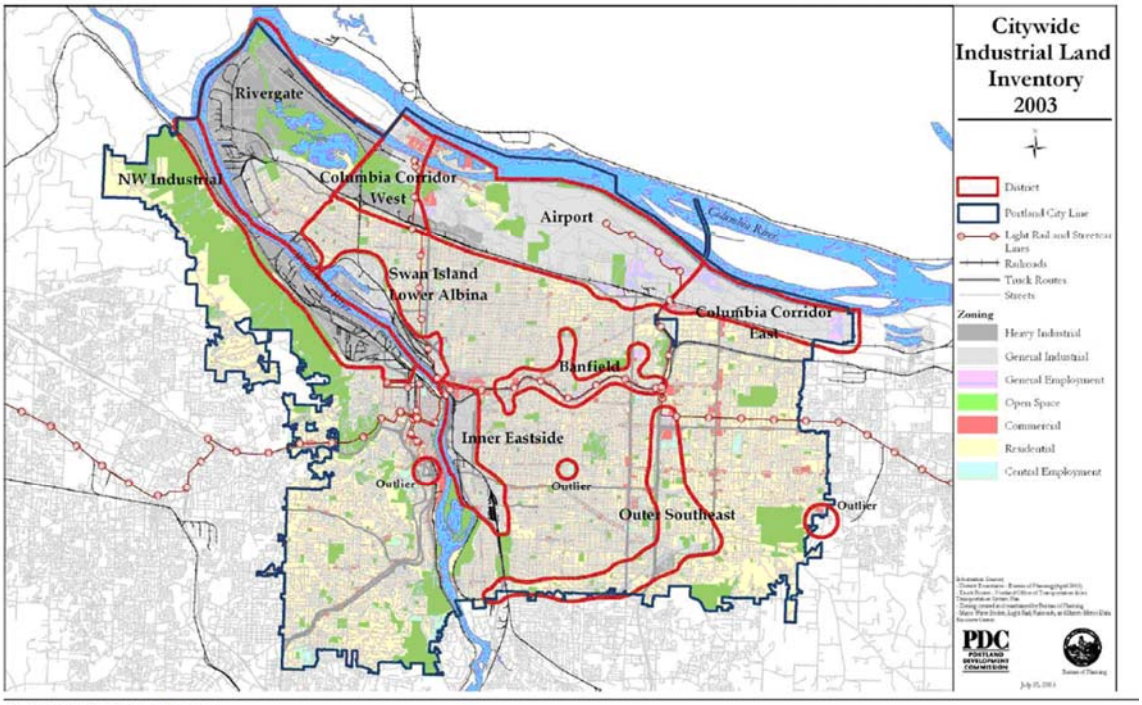
Because of GLIS's proximity to residential and mixed-use neighborhoods and the central city, it has always been extremely vulnerable to pressures for redevelopment for non-industrial uses. During the 1970s, urban renewal had come to Portland, and clashes emerged between residents and industry in the GLIS area. A freeway expansion plan in 1974 was eventually abandoned after neighborhood opposition. Development continued after this time and multi-family residential units were built (condominiums and apartments). In 1987, the City reviewed its vacant land and the report found that over 60 percent of the vacant industrial parcels were located in the Columbia Corridor and in the Central and South Columbia sub-areas. Only two vacant parcels that were not within the flood zone were in the Northwest Industrial District (City of Portland Bureau of Planning 1989). This highlights not only how important this area was to the City, but also how important it was to preserve as an industrial hub with excellent, marine, highway, and rail access. The impacts of industrial preservation in the Portland region are felt not only within the Portland area but also by a series of smaller ports along the Columbia and Snake rivers that are wholly dependent on Portland as their international trade gateway.

During 1989 and 1994, two proposals were received by the City to redevelop industrial sites within the Northwest Industrial Sanctuary Area (NWIS) as "big-box" retail centers. These were denied by the City upon appeal. Both proposals planned large-scale commercial development that would significantly increase traffic. Discussions in City meetings focused upon the issue of the border areas between uses, and how encroachment of non-industrial uses into an industrial area would further encourage spot zoning. Spot zoning occurs where a small tract of land is zoned differently from the surrounding area. In some states, spot zoning has been found illegal on the ground that it is incompatible with the existing land-use plan or in the overall zoning scheme. Commentary was received by the City that also argued that allowing such a zoning change would also establish legal precedence, which would affect the City Council's ability to judge future quasi-judicial cases regarding industrial sanctuary properties across the City.

In 1997, another developer request to rezone what was known as the Lutz Tire Property within the NWIS from heavy industrial to mixed use was accepted. This proposal raised the issue of spot zoning for many of the Northwest industrial users. The developer request included the siting of the Northwest Academy, an arts school, which many in the industrial community felt was an inappropriate use in a heavily-industrialized area. The Lutz Tire rezoning application highlighted the discord between the industrial community (and its members in the Northwest Industrial Working Group), who were against the rezoning application, and the redevelopment community, who were in favor of the rezoning. After heated community and City Council hearings, the Lutz Tire site was removed from the industrial sanctuary and the redevelopment took place.

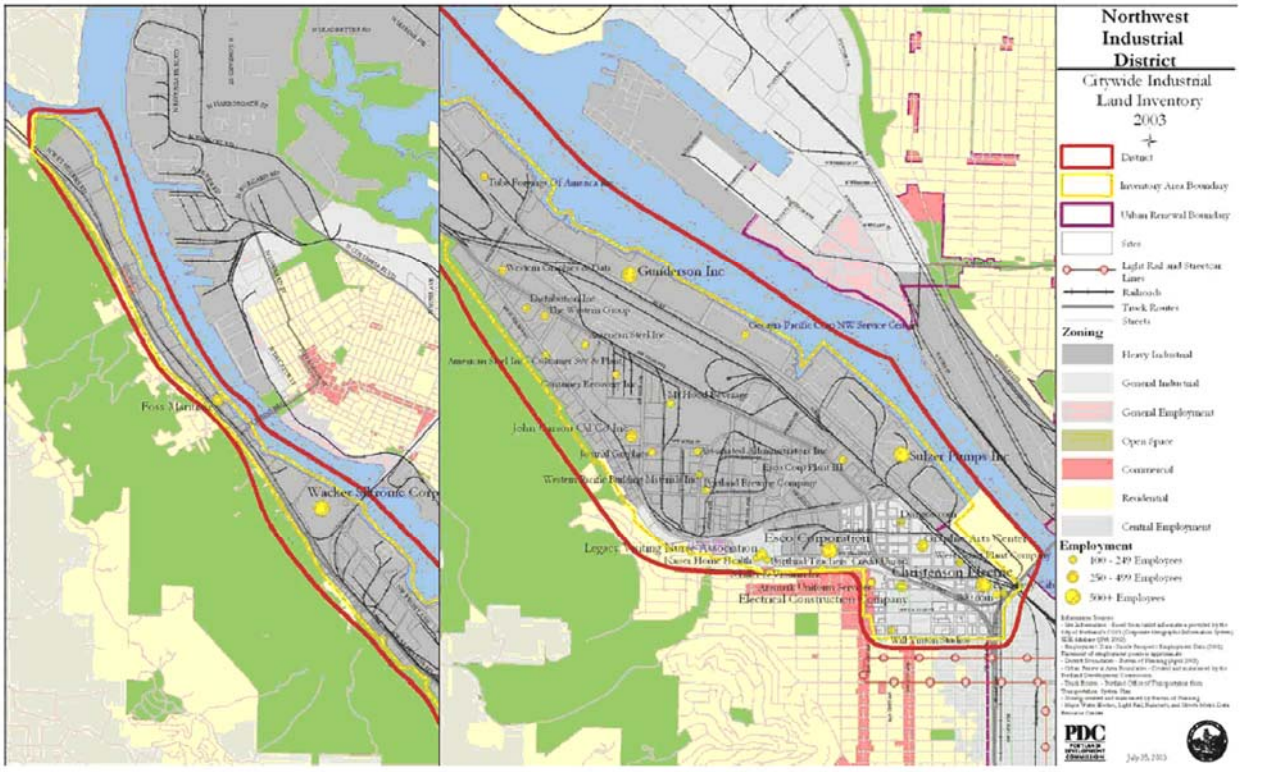
The continued requests for zoning changes within the NWIS (including Guild's Lake) created a climate of uncertainty among industrial businesses in the area (City of Portland Planning Department 2001). However, the requests also set the stage for reinvigoration of industrial sanctuary status. This reinvigoration was reinforced by a 1999 regional industrial land study, a 2003 Portland Development Corporation Industrial Land Inventory (Portland Development Commission 2003), and a 2004 land inventory. The 2004 land inventory found Portland was nearing capacity in the industrial areas, and surplus land was expected to be utilized within the next 20 years (Oregon Industrial Conversion Study Committee 2004). Figure D-2 (Portland Development Commission 2003, 7) is from a 2003 City-wide industrial land use inventory and market study. The study highlights how important the preservation of industrial lands was to the City, in the light of the UGB. Figure D-3 (Portland Development Commission 2003, 59) shows the NWIS (which, in essence, is GLIS) plus an area north of GLIS that includes petrochemical facilities in the City of Linnton.

FIGURE D-2
2003 CITYWIDE INDUSTRIAL LAND INVENTORY



Citywide Industrial Land Inventory & Assessment
Inventory Report: Final Draft, July 2003

FIGURE D-3
2003 GLIS AND NW INDUSTRIAL DISTRICT



Citywide Industrial Land Inventory & Assessment
Inventory Report: Final Draft, July 2003

Timeline of GLIS Development

GLIS development ran over approximately a 10-year period and involved three key groups: the City of Portland, the Northwest Industrial Neighborhood Association (NINA), and the Northwest Industrial Sanctuary Task Force and its Sanctuary Working Group (SWG). GLIS is built on the foundation of NINA's neighborhood plan and the Northwest District Plan, adopted in 1999.

In 1999, SWG reached a consensus on criteria and boundaries of the industrially-zoned areas, including buffer areas between industrial, and residential and mixed uses. Joint recommendations were:

1. Create a NW Industrial Plan District—boundaries would be NW Vaughn on the south to NW 19th on the East. Northern boundary would be the St. Johns Bridge. Western boundary would be the centerline of St. Helens Road and the eastern boundary would be the Willamette River. Upon formation of the Northwest Industrial Sanctuary Plan District, all current comprehensive plan industrial sanctuary zoning will be removed from all areas of the Pearl District Neighborhood Association.
2. State in writing that industrial sanctuary protections would no longer apply to areas zoned IG that are outside the boundary of the plan district.
3. Buffer zones will be determined by the respective four neighborhoods. Wherever appropriate and possible, the two-block buffer zone should exclude new residential zoning. Highway 30 will act as the only buffer between the NWIS and the Linnton Neighborhood

Association in the Willbridge area beginning at NW Kittridge Road, and extending north to the St. Johns Bridge.

The policy plan and implementing regulations for the NWIS, and the transition of industrially-zoned lands south of NW Vaughn to non-industrial uses, was agreed upon by the four participating Northwest neighborhood associations.

The purpose of the GLIS is to provide a policy framework that preserves industrial land and protects its long-term economic viability as an industrial district. The GLIS vision statement, policies, and objectives were adopted as part of Portland's comprehensive plan (Section 5.12). The GLIS action plan also lays out specific projects, programs, and regulations to implement the vision and its policies and objectives over a 20-year period. One of the most important elements within the GLIS is an inherent understanding—and zoning options—for transition areas between land uses.

Figure D-4 shows the major milestones in development of the GLIS. Figures D-5 (City of Portland Bureau of Planning 2001, 18) and D-6 (City of Portland Bureau of Planning 2001, 19) show the existing land uses in GLIS as of 2001.

FIGURE D-4
TIMELINE OF GLIS DEVELOPMENT

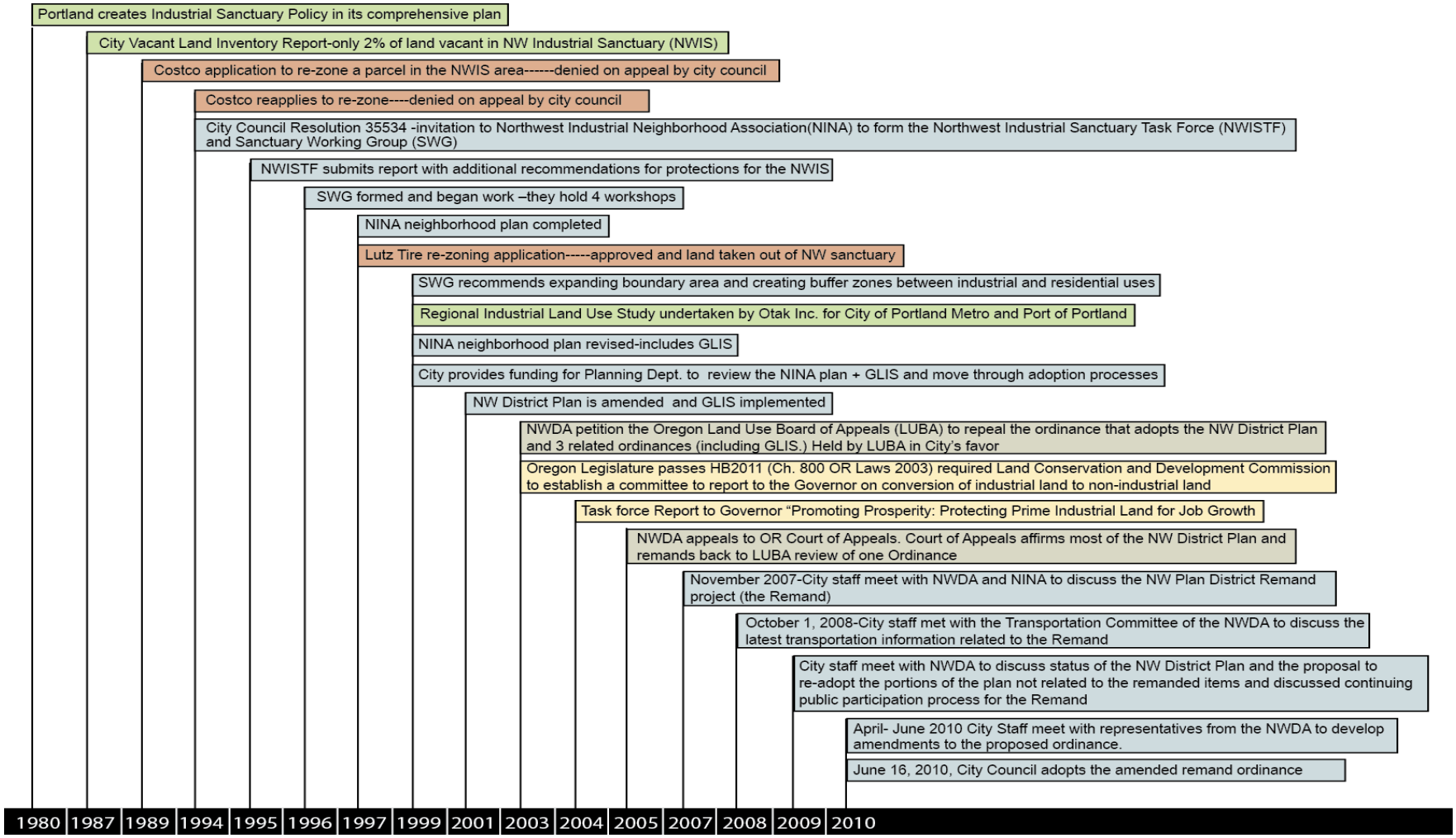


FIGURE D-5
EXISTING LAND USES IN GLIS, 2001

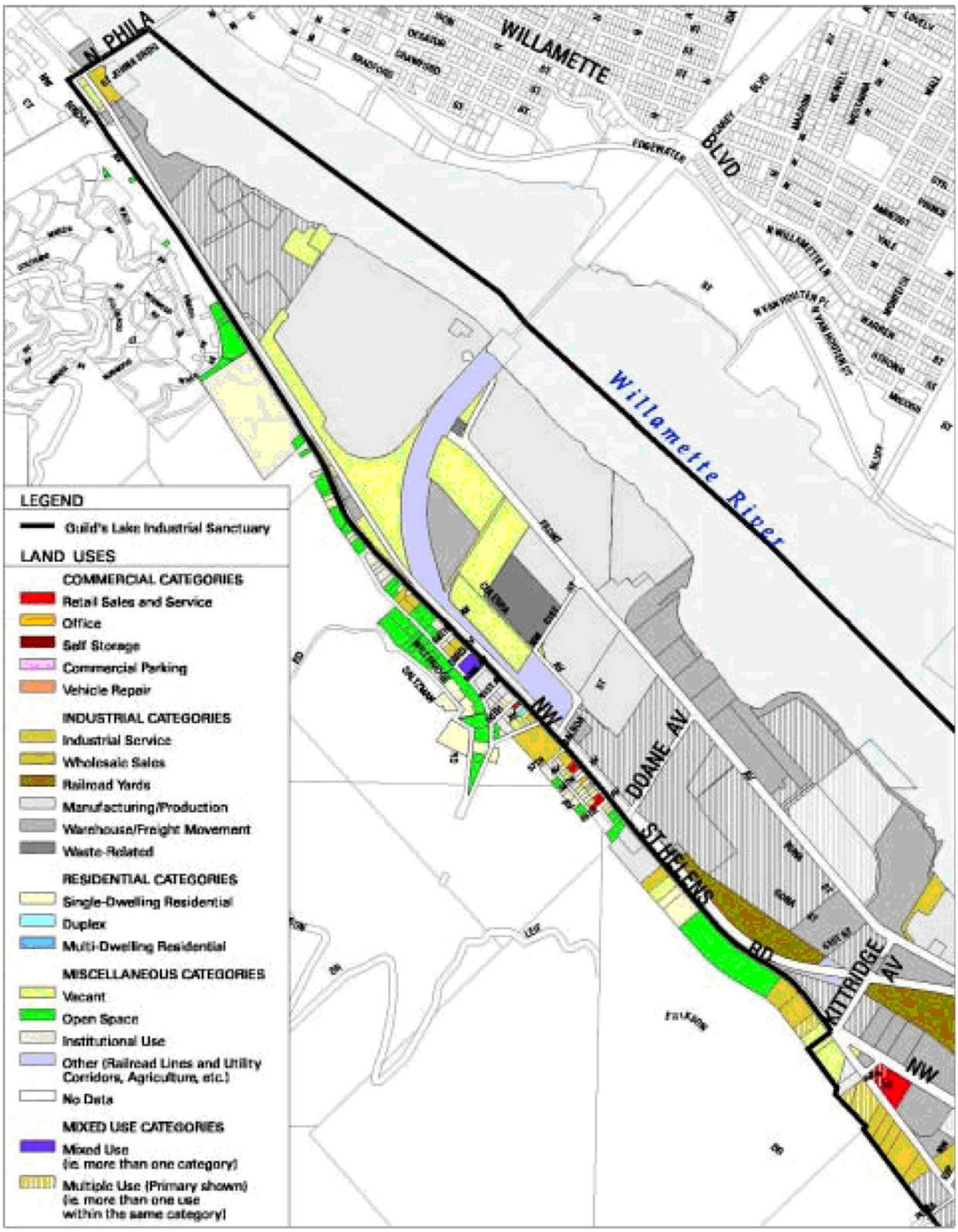
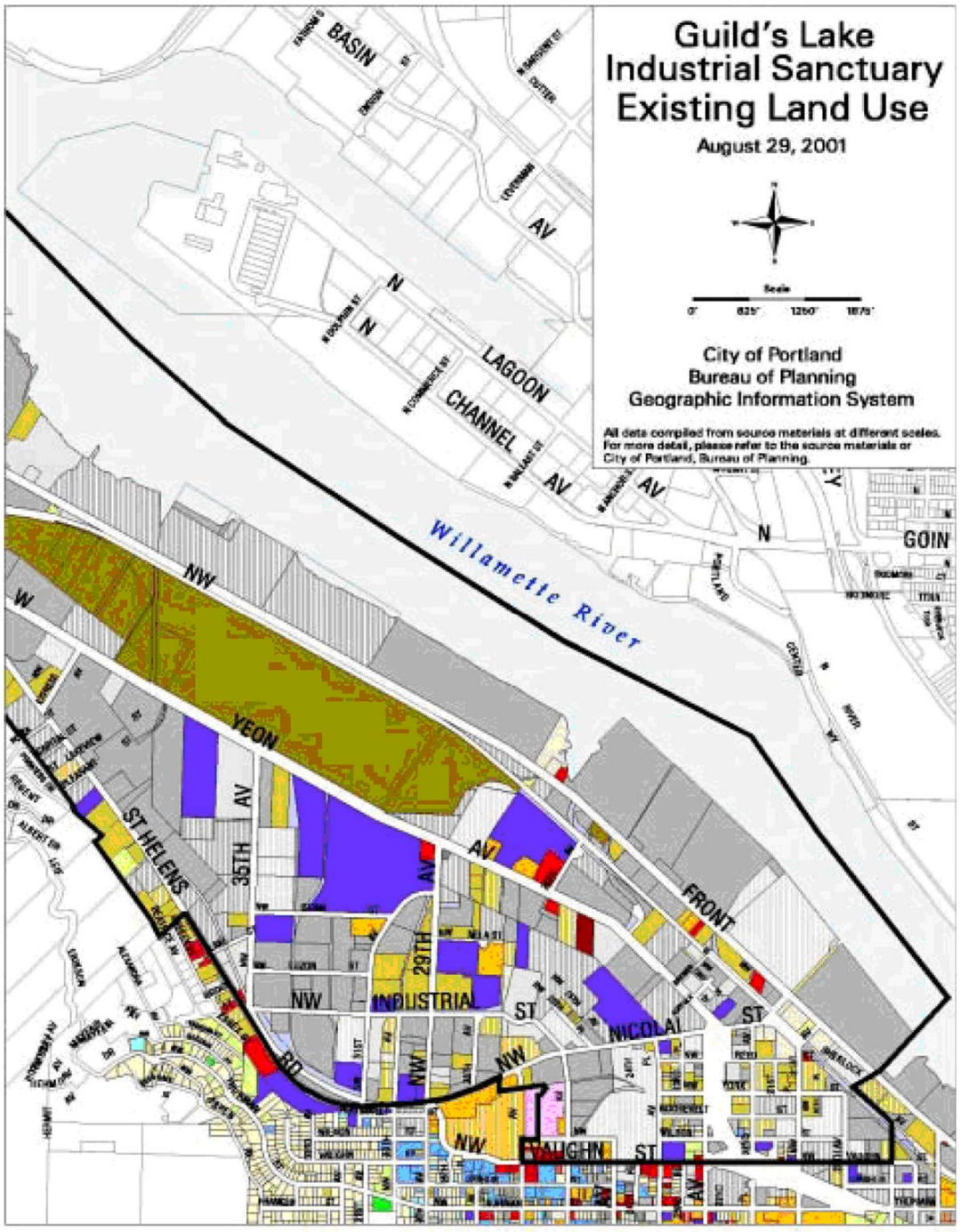


FIGURE D-6
EXISTING LAND USES IN GLIS, 2001



Litigation

In 2003, the North West District Association (NWDA), the community association of northwest Portland, brought a complaint to the Land Use Board of Appeals (LUBA) of the State of Oregon regarding the City of Portland ordinance, which adopted the Northwest District Plan (NDP) and three related ordinances (including GLIS) (A126345 2005). The disputed ordinances were:

- Ordinance 177920, which adopted the NDP, amended the central city plan, and re-designated 16 acres within GLIS north of NW Vaughn from industrial to employment comprehensive map designations.
- Ordinance 178020, which adopts City code amendments governing parking in the Northwest District, and authorized construction of six commercial parking structures on specifically-identified sites zoned residential or split-zoned for residential and commercial uses.
- Ordinance 177921, which amends City code to grant a property tax exemption for construction of new 'transit-supportive' residential and mixed use development.
- Ordinance 177992, which amends City code to include a new chapter that creates a transportation fund for improving transportation facilities in the Northwest District.
- Resolution 36171, which adopted a series of action charts that implemented projects, programs and regulations described in the NDP (and, by inclusion, the action items that the GLIS Ordinance and plan recommended).

The NWDA complaint focused on five main areas:

1. Disputed the acreage that was rezoned within the four ordinances that were passed, which included some areas that were in the transitional zone between the GLIS and the Northwest District Plan adopted under Ordinance 177920.
2. Argued that changes to parking requirements, and construction of six commercial parking structures that were zoned residential or split-zoned residential and commercial in Ordinance 178020, were inconsistent with the protection of historic resources, violated the statewide planning goal regarding historic areas and open spaces, and triggered an automatic assessment under Statewide Planning Goal 5 (Natural Resources, Scenic and Historic Areas and Open Spaces).
3. Argued that commercial parking as defined in City's code is not allowed in the underlying base residential zones.
4. Argued that the ordinances 177920 and 178020 were inconsistent with state and local housing-related requirements.
5. Argued that the ordinance 178020 is inconsistent with Statewide Planning Goal 2 (Land Use Planning), the Transportation Planning Rule, and the city's transportation system plan, and portions of the City's code and plan that relate to parking.

In reviewing the challenged decision, LUBA found in favor of the City on most of the points of error that NWDA and the other intervenors' raised. LUBA affirmed Ordinances 177921, 177992, 178020, and City Council Resolution 36171, but remanded Ordinance 177920. In the remand of Ordinance 179220, LUBA found that the City had not met its evidentiary burden under Statewide Planning Goal 12, Transportation, and Oregon Administrative Rules 660-0012-

0060, Transportation Planning, to show that comprehensive map plan re-designations and rezones north of NW Pettygrove, and NW Vaughn would not have significant adverse traffic impacts on NW Vaughn Street, or the NW Vaught and 23rd Street intersection.

In December 2004, NWDA appealed to the Court of Appeals for the State of Oregon. The petitioners sought judicial review of the LUBA order on five assignments of error. The Court reviewed two points of error and rejected the remaining assignments of error without discussion. On March 14, 2005, the Court of Appeals released its decision. The Court of Appeals reviewed LUBA's order to determine whether it was lawful, and affirmed in-part and remanded in-part (*N.W.D.A. v. City of Portland* 2005).

Between 2007 and 2009, City planning staff met with the Transportation Committee of the NWDA, and NINA to discuss the remand and develop amendments to redress the issues in question. On June 17, 2010, the City reviewed and adopted two new ordinances that were created to address the remand points from the LUBA decision in 2003, regarding the State's Transportation Planning Rule (Zehnder 2010). Most of the original NWDP was re-adopted on October 21, 2009 in Ordinance 183269. Two new ordinances were put forward to adopt changes to the comprehensive plan map and zoning map for approximately 55 acres. According to the City's Chief Planner, this ordinance was based on analysis that addressed LUBA's concerns regarding the Transportation Planning Rule.

Draft Ordinance 1:

- North of NW Vaughn—comprehensive plan map was amended from Industrial Sanctuary (IS) to Mixed Employment ME for 16.9 acres.
- North of NW Pettygrove—comprehensive plan map was amended from IS to Central Employment (EX) and the zoning map was amended from General Industrial 1 (IG1) to central Employment (EXd) for 36.5 acres north of NW Pettygrove St.
- NE corner of NW 23rd Avenue and NW Thurman St—comprehensive plan map was amended from Urban Commercial to EX, and zoning map amendment from Storefront Commercial CS to EXd for a 1.7 acre property on the northwest corner of NW 23rd Avenue and NW Thurman.

Draft Ordinance 2:

Amend Title 33, Planning and Zoning to amend the Northwest Master Plan regulations. In 2003, the NWDP eliminated the Northwest Master Plan provision. So simply readopting the NWDP would also eliminate the Master Plan provision. Discussion with property owners and neighbors led to the proposal to retain the Master Plan provision with minor changes. This ordinance amended zoning code language in section 33.562.300, Northwest Mater Plan, and limit the area where the Master Plan will be required to the area it originally applied to, instead of to all sites zoned EXd north of NW Pettygrove and west of NW 23rd Avenue.

Figure D-7 (City of Portland Bureau of Planning and Sustainability 2010) shows the remand map that has been created. Figure D-8 (City of Portland Bureau of Planning and Sustainability 2010) shows the proposed zoning changes, and Figure D-9 (City of Portland Bureau of Planning and Sustainability 2010) shows the changes that will be made to Portland's comprehensive plan maps.

FIGURE D-7
NWPD REMAND MAP

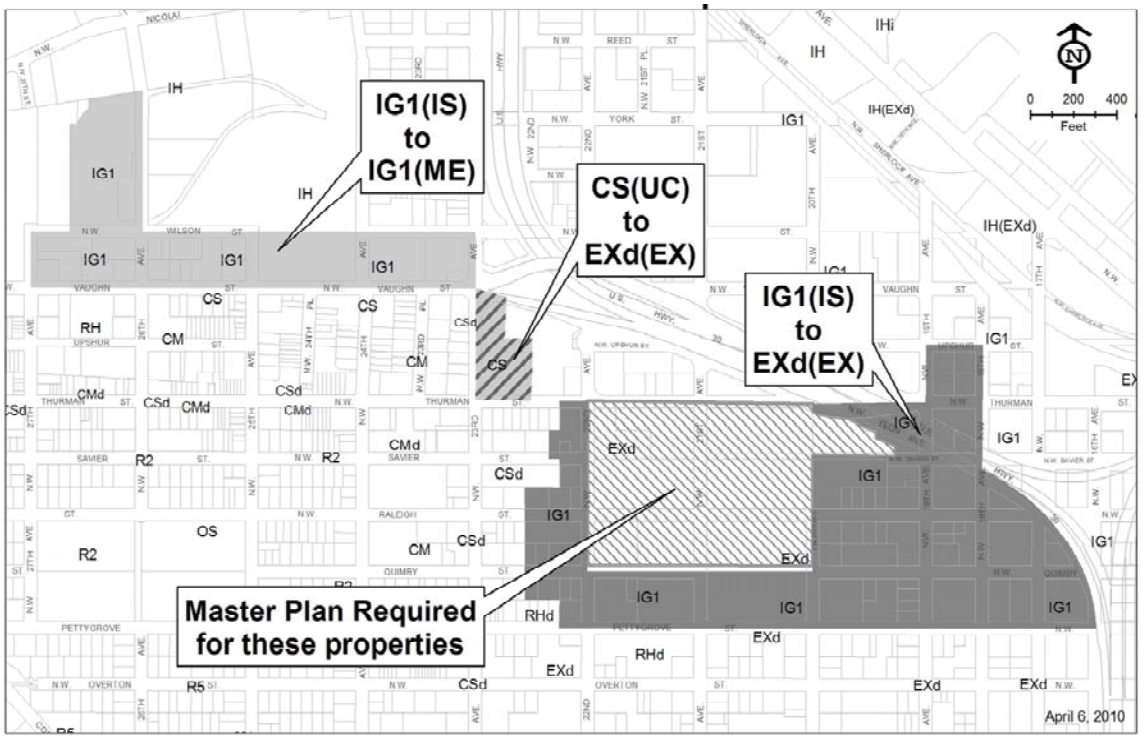


FIGURE D-8
CURRENT AND PROPOSED ZONING IN GLIS

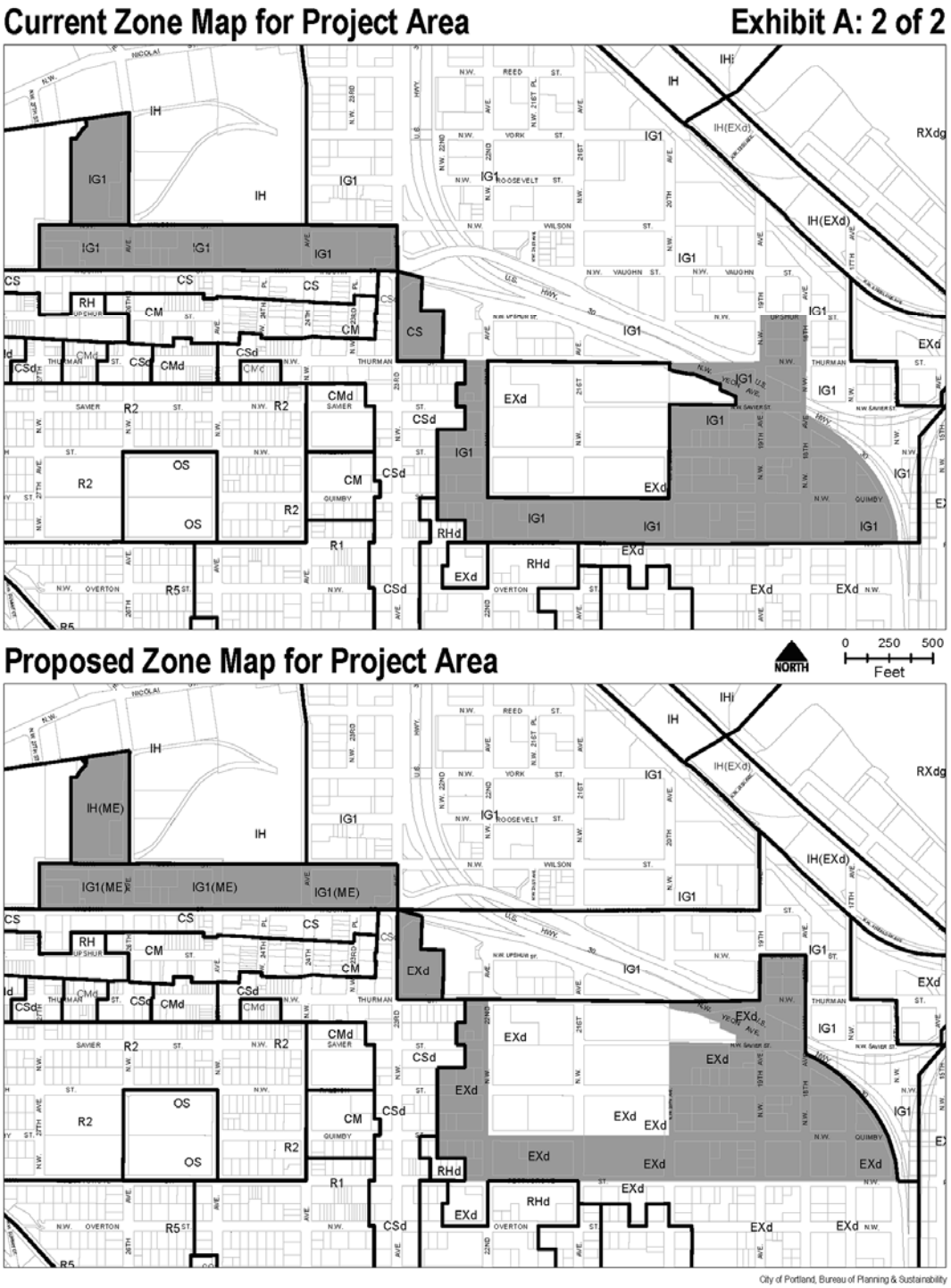
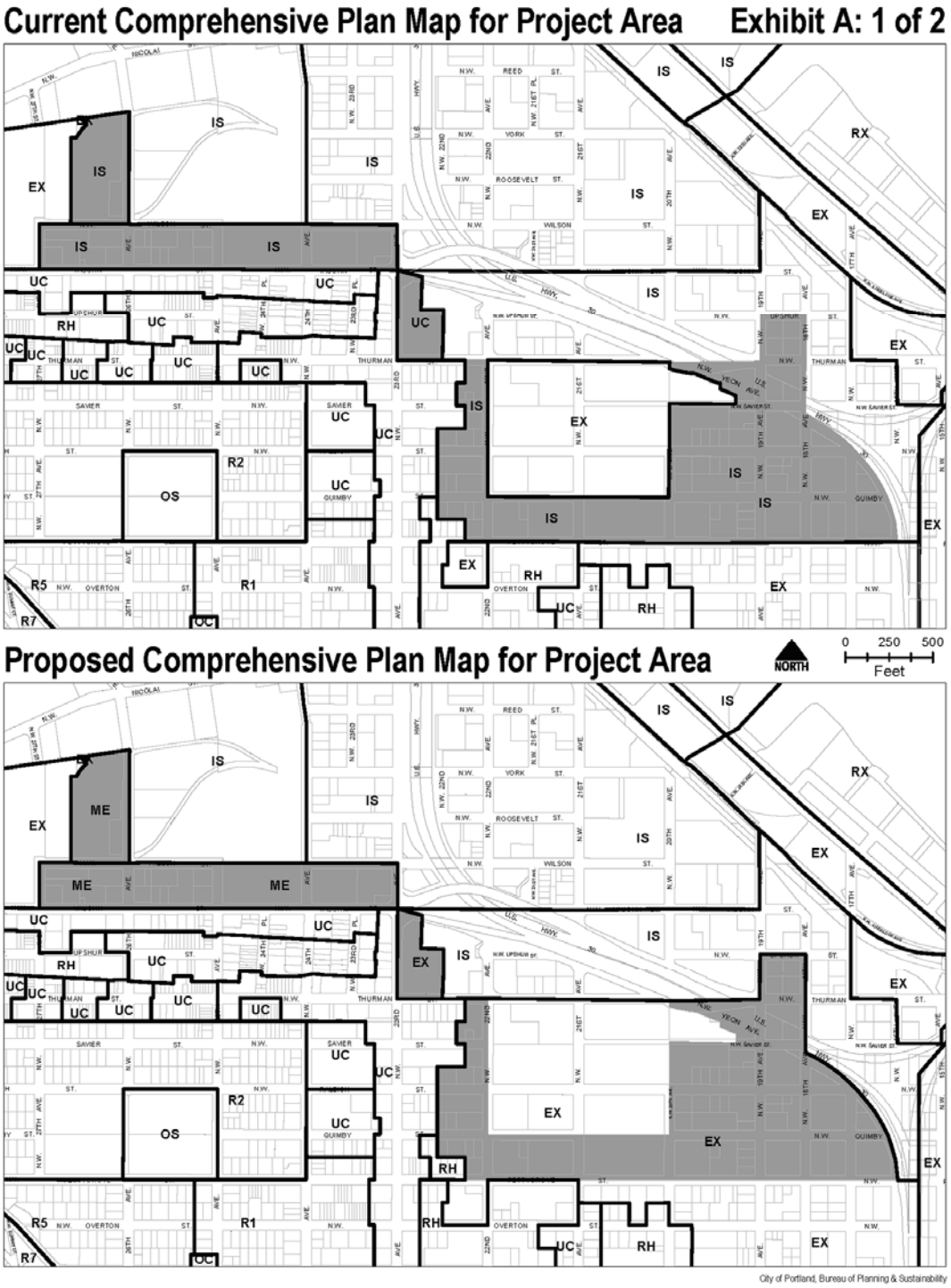


FIGURE D-9
CURRENT AND PROPOSED COMPREHENSIVE MAP AMENDMENTS



As part of this process, the City's Bureau of Planning and Sustainability conducted an updated transportation analysis for the NWDP to determine whether the zoning changes adopted in the plan significantly affect one or more transportation facilities in the NWDP area. This analysis was intended to address the LUBA determination that the City provided insufficient data for two

transportation impact findings relating to land use changes in the NWDPA. LUBA asked the City of Portland to provide answers to two questions:

1. Will the NWDP cause traffic that changes the functional classification of NW Vaughn Street as a neighborhood collector?
2. Will the performance standards at the intersection of NW 23rd Avenue and NW Vaughn Street and the Interstate 405 (I-405) ramp remain at acceptable levels of service?

The analysis assessed the impacts of growth on the transportation infrastructure in the NWDP area and concluded:

1) NW Vaughn Street, which is currently classified as a neighborhood collector, will continue to function as it does today, and
2) With planned future mitigation, the I-405 ramp and the intersection of NW 23rd Avenue and NW Vaughn Street, will have performance standards above the minimum acceptable level (City of Portland Bureau of Transportation and Bureau of Planning and Sustainability 2010).

City of Linnton Rezoning Efforts

The litigation that surrounded some of the transitional zoning elements that were put in place within GLIS also show that even when communities work together and all seems well, plans can still be contentious.

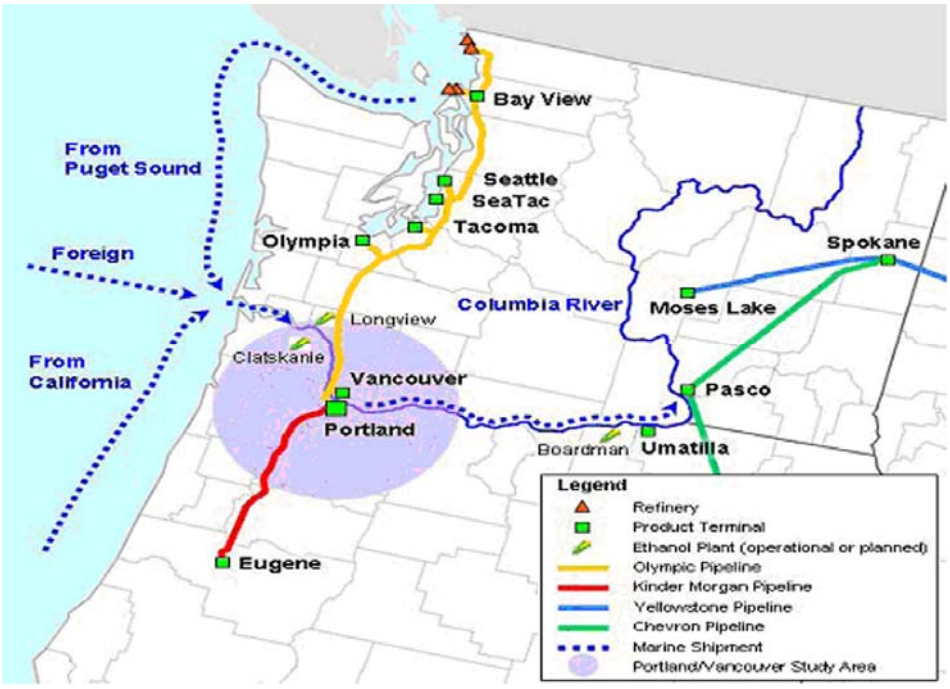
Notwithstanding the development of the City's industrial sanctuary policy, and the creation of industrial sanctuary districts, the 2004 Industrial Districts Atlas noted that "Portland's industrial districts are unknown territory to most residents." Community plans are also still trying to convert industrially-zoned land into residential and mixed-use districts, especially at the waterfront. For example, in 2005, the City of Linnton (just north of GLIS and part of the Northwest Industrial Sanctuary area noted on the Comprehensive Plan) began to evaluate converting large portions of the industrially-zoned land in the Linnton Village Study Area, to residential and recreational use. The area proposed for rezoning sat in between heavy industrial areas that contained refineries, pipelines, and oil storage for a new town center and mixed-use development (City of Portland 2006).

Olympic Pipeline Company, BP West Coast Products, and Kinder-Morgan commissioned a report to highlight the hazards of placing residential and recreational uses close to this petrochemical energy cluster area. Oregon does not have any petroleum refineries, so it is dependent upon shipments of refined petroleum. Refined petroleum enters the state in four ways: truck ship/barge, rail, and the Olympic pipeline, which was built in Linnton in the 1960's. The pipeline is the preferred means of shipment, as it is cheaper, more energy efficient and ecologically sound. The terminus of the pipeline in Linnton has made this area a prime location for terminal, storage and distribution operations for not just Oregon, but also Washington State. The report noted that the energy cluster in Linnton is not simply a

> collection of tanks and pipes that can be located anywhere…. The convergence of the freight infrastructure and logistical investments that support it have led to the creation of an efficient and highly regulated petroleum transfer and distribution network that is a cluster" (Philip E. Grillo and Miller Nash LLP 2005).

Figure D-10 (Mathers and Theisen 2008) shows this energy cluster and how the importance of the Olympic and Kinder-Morgan Pipelines.

FIGURE D-10
THE ENERGY CLUSTER AND LINNTON'S IMPORTANCE



The private sector partners hired counsel, and the Working Waterfront Coalition was created to contest the Planning Commission's plans. The Planning Commission recommended the mixed-use rezone. However, the City Council overturned the Planning Commission noting, among other things, that the area would be unsafe for housing. According to Mathers and Theisen, the neighbors remain dissatisfied with the outcome, an adverse relationship occurred, and there was lost opportunity for mutual gains.

Conclusions

Neighborhood communities will often place a value on industrial land and potential job creation. Portland and the State of Oregon have undertaken multiple exercises over the past 20 years in reviewing the status of available land for different uses and in developing ordinances and other measures to protect and promote these uses. Clearly, the neighborhoods in the northwest of Portland viewed the industrial areas as a critical component of their economic development. The continuous support and effort put into developing the GLIS ordinance is a testament to the importance of keeping this working waterfront and industrial hub viable. However, post-GLIS activities show that the balance between the many stakeholders can be precarious, and litigation can occur.

The timeline for implementing a new comprehensive plan amendment, or zoning amendment—based on both review of the MIZOD in Baltimore and GLIS—averages about a minimum of five to ten years.

Similar to the critique of the MIZOD ordinance, the GLIS ordinance does not protect the transportation corridors that run into this industrial sanctuary. However, Portland's Comprehensive Plan Policy 5.4 (A) Transportation states:

> Support multimodal freight transportation improvements to provide competitive regional access to global markets and facilitate the efficient movement of goods and services in and out of Portland's major industrial and commercial districts. Ensure access to intermodal terminals and related distribution facilities to facilitate the local, national, and international distribution of goods and services (City of Portland Bureau of Planning and Sustainability 2006).

Thus, Portland planners are aware of the importance of 'access' to critical industrial and freight intensive facilities.

Finally, the State of Oregon and the City of Portland are well-known for having an extremely proactive stance regarding planning. So what is achievable in Oregon and Portland regarding the development and continued protection of industrial sanctuaries may not be achievable elsewhere.

APPENDIX E

CASE STUDY: THE RELOCATION OF INTERMODAL FACILITIES

Introduction

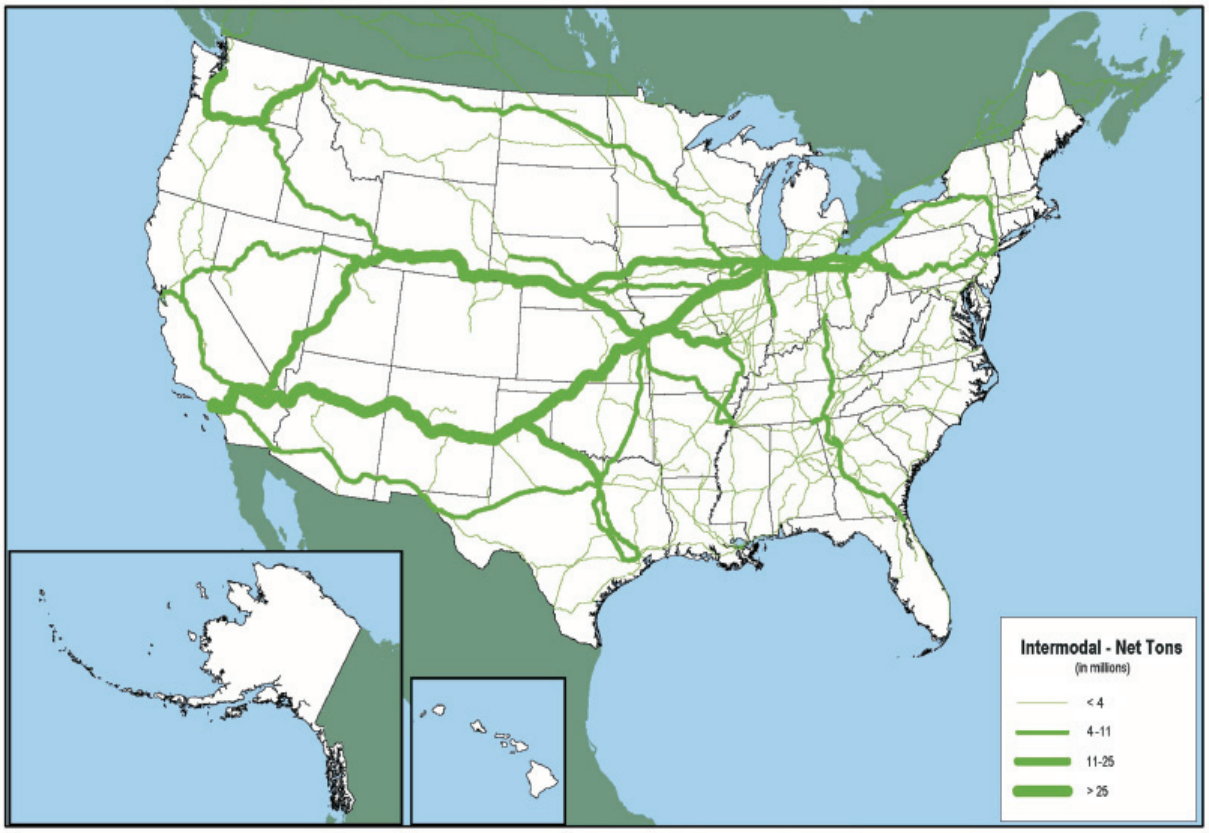
Many truck-rail intermodal facilities are located in urban areas. Over time, due to growth in volumes and growth of surrounding development, these facilities often become capacity constrained, and efficient operations are hampered by congestion and encroachment on freight facilities and corridors. One response to this problem has been to relocate the facilities to sites where capacity can be expanded and the transportation infrastructure is relatively uncongested.

This case study presents two different experiences with relocation efforts—the Joliet Arsenal redevelopment, southwest of Chicago, and the Whitaker Intermodal Terminal, west of Atlanta. Although timelines for each of these projects are not all that different, there are significant differences in the processes from beginning to end of the projects. A comparison of these two experiences highlights key factors that contribute to the timely completion of such facilities and, conversely, factors that create delays and additional costs.

Joliet Arsenal Redevelopment

The Chicago area is commonly recognized as the major freight hub in the United States, serving all major modes of freight transportation. This is illustrated in Figure E-1 (U.S. Department of Transportation Federal Highway Administration 2006), which shows that a significant amount of U.S. intermodal traffic (i.e., truck-rail) flows through Chicago. Chicago is also recognized as a very congested freight hub, particularly for freight moving by truck and rail. For example, it has been noted that rail freight that takes approximately two days to travel from the West Coast to Chicago, can take another full day just to get through Chicago (Lanigan, Zumerchik, et. al 2007). To alleviate this congestion, a number of projects have been implemented to improve the flow of freight traffic through the Chicago area (e.g., CREATE) or to relocate facilities out of central Chicago.

FIGURE E-1
U.S. INTERMODAL TONNAGE



A prime example of relocation out of the central Chicago area is the "brownfield" redevelopment of the abandoned Joliet Arsenal site and surrounding areas into an intermodal hub. The Joliet Arsenal site is located near two interstate highways and is served by two major railroads, BNSF and Union Pacific (UP). The lynchpins of this development are the CenterPoint Properties' intermodal centers at Elwood (CIC-Elwood) and Joliet (CIC-Joliet). BNSF's Logistics Park-Chicago (LPC) is located at CIC-Elwood, and UP's Joliet Intermodal Terminal (JIT) is located at CIC-Joliet. These facilities are located about 40 miles southwest of downtown Chicago, near the intersection of Interstate highways I-80 and I-55. Synergies resulted in this development from the collocation of multiple freight facilities, such as transportation, warehousing, distribution, cross-docking, and container storage. The collocation of these facilities and proximity to the interstate highways also results in substantial drayage savings and more efficient utilization of trucking resources.

History of the Joliet Arsenal Development

The Joliet Arsenal was opened in 1940 as two separate facilities, the Elwood Ordnance Plant and the Kankakee Ordnance Works. The two plants were deactivated in 1945 and combined to form the Joliet Arsenal. The plant was reopened during the Korean War in the 1950s and continued operations through the Vietnam War. Major operations at the plant closed in the late 1970s (Joliet Arsenal Development Authority 2010, 9). At its height, the plant employed almost 12,000 people in the 1940s, and was a magnet for migration to the area. The plant employed about

8,000 in the 1960s (University of Illinois at Springfield and Crawford, Murphy & Tilly, Inc. 1999, 1).

In 1993, over 23,000 acres at the site were declared excess Army property. As part of the Illinois Land Conservation Act of 1995 (PL 104-106), the site was subdivided for both public and private use. Redevelopment plans included large tracts of land for the Abraham Lincoln National Veterans Cemetery (almost 1,000 acres), and the U.S. Forest Service's Midewin National Tallgrass Prairie (19,000 acres). President Clinton approved legislation to convert the former Joliet Army Ammunition Plant into a variety of civilian uses in February 1996 (Talbott 1996). In addition, the government retained a portion as the Joliet Army Training Area. The Joliet Army Ammunition Plant was originally designated as a Superfund site in 1987 (USA Today 1987) and the Environmental Protection Agency (EPA) maintains portions of the property on the Superfund national priorities list (Joliet Arsenal Development Authority 2010, 9).

About 2,000 acres of the site were set aside for commercial and/or industrial development. Early visions for the Joliet Arsenal site redevelopment had included the construction of a third regional airport for the Chicago area (Gillis 1992). To spearhead economic development opportunities at the site, the state of Illinois established the Joliet Arsenal Development Authority (JADA) in 1995 (Public Act 70 ILCS 508/1). JADA was charged by the state with finding ways to replace jobs and revenue that had been lost when Arsenal closed in 1977 (Podmolik 1997). During the planning stages, the project brought together virtually all levels of government, more than a dozen public agencies, and private industry (Mullen 2005, 2).

In October 1997, JADA sold 1,900 acres at the Joliet site to a California-based developer Transport Development Group Inc., which announced its plans for a cargo warehousing and transfer center to be built starting in 1998. In December 1997, Transport Development Group announced plans to construct a landfill on the site alongside the cargo handling facility. This led to almost immediate opposition from political leaders and veterans groups. This opposition reflects the outcome of an earlier proposal for the site that called for the creation of a $100 million-ton landfill. It was believed that the landfill would have created a revenue stream to fund the development of a new industrial park. However, this plan proved untenable due, in part, to the nearby position of a military cemetery (Golab 1998).

Transport Development officially abandoned the landfill plan in February 1998, and the future of the site seemed uncertain until Transport Development sold the property to CenterPoint in the summer of 1998. CenterPoint promised not to develop a landfill and, instead, vowed to invest its own capital resources into the site to transform it into a major intermodal facility.

In 1999, JADA released a Strategic Plan for development of the site. Of major concern to the area was a relatively high unemployment rate. Thus, using the Joliet Arsenal site as an engine of local economic development was critically important. The Strategic Plan noted that "the availability of a large parcel of land in the region, in proximity to major transportation infrastructure of rail and highway, make the JADA property a prime location for a major intermodal transportation facility" (University of Illinois at Springfield and Crawford, Murphy & Tilly, Inc. 1999, 3).

In support of the development of an intermodal transportation facility at the Joliet Arsenal site, the Strategic Plan cites two GAO studies that concluded long-term solutions to congestion and capacity issues facing Chicago transportation infrastructure should include "a multi-user intermodal terminal located near or in Chicago that would permit rail-to-rail connections," and that "In support of the GAO report, the US DOT recommended a site outside the city in order to alleviate inner city truck congestion" (University of Illinois at Springfield and Crawford, Murphy & Tilly, Inc. 1999). Figure E-2 (GoogleEarth 2010) shows the CIC-Elwood site in 1998, prior to any development (with the future Partners Warehouse site serving as a landmark).

Importantly, the Strategic Plan noted that, in addition to being near major transportation corridors, the Joliet Arsenal site was also relatively well-buffered from conflicting land uses (as can be seen in Figure E-2):

> There are few, if any, other locations in the Chicago metropolitan area with so much transportation access yet so buffered from residential land uses. The parks' biggest neighbor, the Midewin National Tallgrass Prairie, encompasses 19,000 acres of prairie restoration. The perpetually serene environment guaranteed by the presence of the Abraham Lincoln National Cemetery makes it a particularly desirable neighbor (University of Illinois at Springfield and Crawford, Murphy & Tilly, Inc. 1999, 7).

FIGURE E-2
CIC–ELWOOD SITE, APRIL 1998



In a separate transaction, CenterPoint acquired a 375-acre farm in May 1999 to increase the size of the proposed industrial park to almost 2,200 acres. Prior to commencing construction on the site, more than 1,200 separate structures on the property had to be demolished. Furthermore, the Arsenal's status as a Superfund site meant that environmental remediation needed to be completed before new development could take place (Mullen 2005).

The actual transfer of land from the U.S. Army was accomplished in the summer of 2000 through a Memorandum of Agreement and Deed (Memorandum) between JADA, in conjunction with CenterPoint, the U.S. Army, the U.S. Environmental Protection Agency and the Illinois Environmental Protection Agency. Key elements of the agreement provide assurances regarding the cleanup of the parcel on terms acceptable to the developer (PRNewswire 2000). The memorandum determined the terms by which military property could be converted for private use and was the first time the Army had ever entered into such an agreement (Mullen 2005). The memorandum, thus, established a national model for subsequent conversions by private developers of military sites that are classified as excess.

Other important steps to getting the Joliet Arsenal development off the ground included the annexation of the industrial park into Elwood and creating a tax incremental financing (TIF) district to provide CenterPoint with tax incentives for developing the land. The proposed TIF district was opposed by local school districts from Joliet and Elwood on grounds that the districts would be denied property tax revenue from the industrial park for 23 years (Ziemba 2000). However, the Elwood Village Board approved the creating of a TIF district that called for $100 to $125 million in TIF support. The Board also approved annexation of the parcel and creation of a new I-4 flexible zoning designation (for manufacturing or distribution) to enable the development (PRNewswire 2000). In addition, financing was obtained from the Illinois Department of Commerce and Community Affairs (DCCA) to fund the construction of a new water and sewer system, and from IDOT and DCCA for road improvements (PRNewswire 2000).

In order to minimize conflict with nearby land uses, CenterPoint donated 83 acres to the Forest Service, 10 acres to Elwood and 60 acres to a wetlands conservation project (Brick 2002). These and other "side deals" helped to prevent a buildup in animosity from the community over any impacts in quality of life from the imminent industrial activity. In total, CenterPoint estimated that it dealt with 50 governmental entities while developing the project (Brick 2002).

Description of Current Development

BNSF committed to operate the rail-truck transfer facility in August of 2000 (Kaufman 2000). The company cited Alliance, Texas as the prototype for developing the Joliet site (Blaszak 2003). The budget for the project, at $941 million, was deemed "Centerpoint's largest, and riskiest, deal" as it eclipsed the company's own market capitalization (Corfman 2000).

BNSF Logistics Park-Chicago (LPC) is part of the 6,000-acre CenterPoint Intermodal Center (CIC) complex located in the Joliet and Elwood, Illinois area. The CIC-Elwood development is 2,500 acres, with BNSF Logistics Park-Chicago occupying 770 acres. Other tenants of CIC-Elwood include Wal-Mart, DSC Logistics, Georgia Pacific, Potlatch, Sanyo Logistics, Partners Warehouse California Cartage, Maersk, and Bissel (Centerpoint Properties, 2010a). Construction began in 2000. Partners Warehouse committed to constructing a 300,000 square-

foot warehouse and distribution center served by the BNSF yard in October 2001 (PRNewswire 2001). The facility opened in October 2002.

Union Pacific's new Joliet Intermodal Terminal (UP-JIT) is located in the 3,600-acre CenterPoint Intermodal Center in Joliet, IL (CIC-Joliet), and is two miles north of CIC-Elwood and BNSF's Logistics Park-Chicago. UP-JIT occupies 785 acres. The park is zoned for a third Class I intermodal facility (Centerpoint Properties 2010c). Construction began in August 2009 and the facility opened in August 2010.

Figure E-3 (GoogleEarth, 2010) is the GoogleEarth view of CIC-Elwood and BNSF's LPC in June 2009 (construction had not yet started on UP's JIT). This is the same site as that shown in Figure E-2, which was taken in April 1998.

FIGURE E-3
CIC-ELWOOD SITE, JUNE 2009

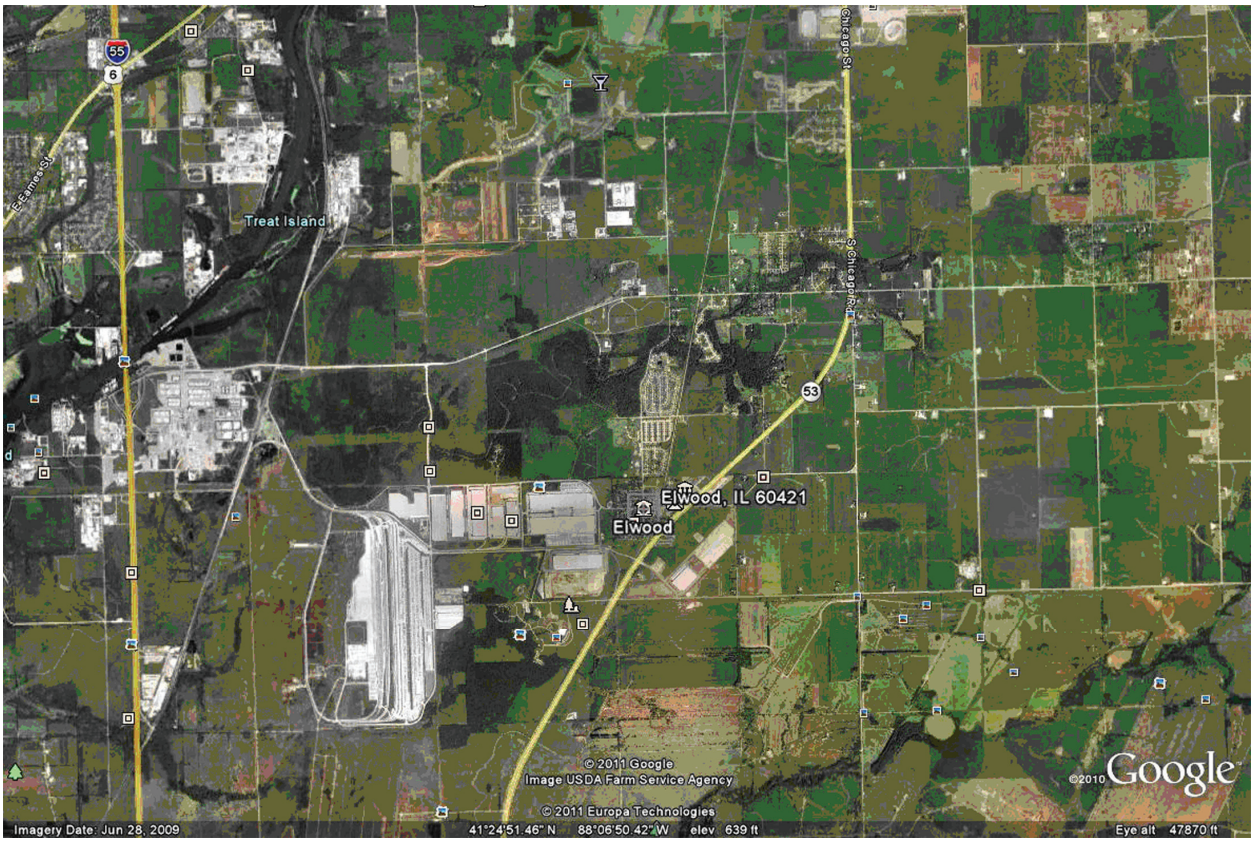
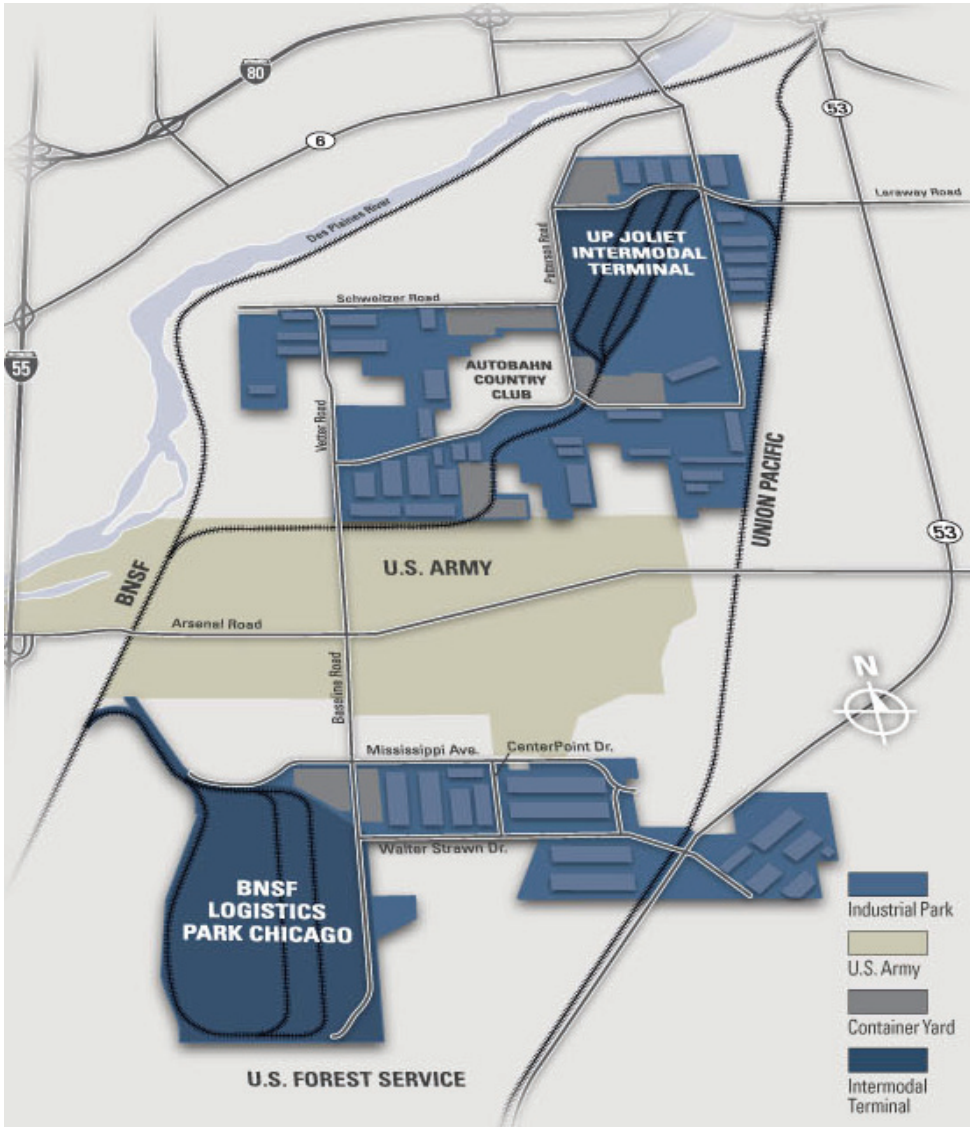


Figure E-4 (Centerpoint Properties, 2010b) shows a current schematic of CIC-Elwood and CIC-Joliet, which together, are advertised by CenterPoint as the nation's largest inland port. Relative to Figures E-2 and E-3, CIC-Elwood and BNSF's LPC are south of Arsenal Road, while CIC-Joliet and UP's JIT are north of Arsenal Road (not shown in Figures E-2 and E-3).

FIGURE E-4
SCHEMATIC OF CIC- ELWOOD AND CIC-JOLIET



Promotional materials from CenterPoint highlight advantages of the facility such as shorter drays, fewer drivers required with more turns per day and reduced carbon footprint due to close proximity of facilities (such as warehousing, distribution and container storage) within the immediate area. Also highlighted is the location close to I-55 and I-80 and the public transportation available for the area's workforce (Centerpoint Properties 2010c).

JADA Transportation Plan

With the development and growth of the Joliet Arsenal site as an intermodal hub have come congestion and capacity issues regarding the area's transportation corridors. In 2004, a transportation plan for the area was developed with a key objective being:

> [T]o identify a subset of planned transportation investments that could be used as a starting point in a consensus-building exercise among area stakeholders that would lead to the implementation of important transportation projects (Joliet Arsenal Development Authority 2010b, 1).

In May 2010, the plan was updated. A number of local stakeholders participated in the development of the plan as members of the JADA Study Oversight Committee (SOC). Members of the SOC included JADA, Will County Governmental League (WCGL), Will County Center for Economic Development (CED), Will County, the Regional Transportation Authority (RTA), Pace, Metra, and the Chicago Metropolitan Agency for Planning (CMAP). The plan was presented to the SOC over several meetings. Presentations were also made to major local employers, IDOT, Midewin National Tallgrass Prairie, City of Joliet, Empress Casino of Joliet, and Chicagoland Speedway (Joliet Arsenal Development Authority 2010b, 2).

The updated plan noted the importance of Will County's transportation infrastructure for national and international freight transportation, but that local mobility can be problematic due to the volume of truck traffic generated by the facilities and at-grade rail crossings. Both were anticipated to worsen in the future and the resulting congestion would likely minimize the area's transportation advantages (Joliet Arsenal Development Authority 2010b, 22-23).

Developing a short list of transportation projects was seen as a way of generating agreement among stakeholders on which projects were most critical. This short list was then to be used as a means of building support for these projects. One recommendation for promoting these projects was through the formation of a transportation management association (TMA) for the area. In May 2010, a companion piece to the updated transportation study was issued to determine the feasibility of establishing a (TMA) in southwest Will County. According to the document:

> A TMA represents the interests of businesses and local officials whose goal is to improve mobility in a region through advocacy and transportation demand management (TDM) programs. Illinois has several TMAs operating within its borders and there are approximately 150 TMAs nationwide (Joliet Arsenal Development Authority 2010a, 4).

It was believed that the TMA could facilitate the dialog necessary for building consensus and promoting the implementation of key transportation projects in the area. One of its functions would be to serve as a coordinator for those projects involving multiple jurisdictions (Joliet Arsenal Development Authority 2010b, 39).

Will County Cargo Container Storage Model Ordinance

Another factor in the growth of the Joliet Arsenal as a major intermodal hub is the need for storage of cargo containers. In 2006, it was expected that at least another 200 acres would be needed for future cargo container storage (Will County Center for Economic Development 2006). It was posited that both users of the intermodal facilities and neighbors of the facilities (e.g., residential) would ideally like to see any cargo container facilities located as close as

possible to the intermodal facilities. Not only would such a location enhance the efficiency of intermodal operations, but it would minimize the negative impacts on surrounding areas (Will County Land Use Dept. 2006).

In 2006, Will County developed a model ordinance for the storage of containers that is designed to avoid or mitigate conflicts with other land uses and also allow for anticipated future needs for cargo container storage. The model ordinance was expected to serve as a template for governmental units within the county to use as they draft or revise their own ordinance. The model ordinance and its companion Cargo Container Facility Checklist can be found in Appendices 1 and 2. Among other things, the model ordinance addresses typical encroachment issues such as location of facilities, distances from other land uses, noise and lighting issues, and screening and landscaping requirements.

Norfolk Southern Whitaker Terminal - Austell, GA

Norfolk Southern's main intermodal facility in the Southeast had been Inman Yard in northwest Atlanta. In the early 1990s, the railroad looked for an alternate site as congestion and capacity constraints were a concern at the Inman facility. Not only was intermodal traffic projected to increase significantly, but the city of Atlanta was growing around the Inman facility. At 150 acres, Inman was not large enough to continue in its role as Atlanta's largest intermodal terminal (Atlanta Journal and Constitution 1993). Traffic at Inman had grown consistently through the 1980s from 97,401 trailers and containers in 1982 to 169,727 units in 1988 (Lloyd's List International 1989). Total intermodal handling activity within Atlanta had grown between 1980 and 1990 from 212,000 to 454,000 units (Mayer 1990). These factors made the expansion of Inman an undesirable and difficult option for Norfolk Southern, and the railroad looked for a new location for its major Southeast intermodal facility.

In 1993, Norfolk Southern purchased 830 acres for a new intermodal site, 14 miles west of Inman near Austell on the Norfolk Southern main line. Although physically close to metro Atlanta, Austell was a small community of 4,500 with a territory of five square miles that had seen almost no population growth since 1980. While the city had little available space for residential development, in 1985, the City of Austell incorporated the territory that would eventually become Whitaker and a former thread mill for the planned Sweetwater Industrial Park (Long 1988). Already by the 1980s, local officials faced criticism that they had prioritized industrial development for the area over residential development. By 1990, it was clear that Austell and South Cobb County had a substantial surplus of industrial land. The failure of the Sweetwater Industrial Park, which had been subsidized by $8 million in industrial revenue bonds issued in 1986 by the Downtown Development Authority of Austell, seemed to support this conclusion (Atlanta Journal and Constitution 1990). Figure E-5 (Atlanta Logistics Innovation Council 2010) shows the locations of Inman and the Whitaker site near Austell.

FIGURE E-5
ATLANTA METRO RAIL MAP



In June 1992, the Austell Planning and Zoning Commission voted unanimously to recommend that the City Council rezone 425 acres of the Sweetwater Industrial Park for heavy industrial use, despite significant public protest (Dratch 1992). The developer that sought the zoning change, Bessemer, did not end up acquiring the property. Yet, the approval of the zoning change signaled that the city government was ready, in principal, to accept a heavy industrial use for the property.

Figure E-6 (GoogleEarth 2010) shows the Whitaker site in 1999, prior to development. The site is in the northwest portion of Austell, west of Clarksdale and on the east side of Highway 6. Figure E-6 indicates much more existing development surrounding the Whitaker site than the Joliet site (see Figure E-2).

FIGURE E-6
WHITAKER INTERMODAL TERMINAL DEVELOPMENT SITE, FEBRUARY 1999



Development History

In a March 2010 interview, Joel Harrell, Resident Vice President of Norfolk Southern, said that although Norfolk Southern purchased the land at the Whitaker site in 1993, the project was postponed until traffic levels justified construction. While most of the site was already zoned for industrial use, a small portion (approximately 110 acres) needed to be rezoned.

In early discussions with local and county officials, Norfolk Southern received positive feedback for the project as an economic stimulus for the area. Largely because of this positive feedback, Norfolk Southern did not feel it was necessary to make significant efforts to involve local residents in the planning stages of the project. However, by the time the project was ready for to go forward in 1996, there was strong public opposition to the project:

> The residents of Austell, Clarkdale, Cobb County and other nearby jurisdictions jumped to the understandable conclusion that trains and truck traffic, noise, pollution, and congested roads would disrupt their peace and destroy their property values. …
>
> In the fall of 1996, NS belatedly discovered that local residents were, to put it mildly, up in arms. …

> Opposition came from Clarkdale, Cobb County and nearby city of Powder Springs. The Atlanta Regional Commission, an influential regional planning group, spoke out against the project, citing concerns about land use, environmental issues and the need to protect Clarkdale's historic character (Faga 2006, 45).

There were numerous conflicts between the railroad and local citizens and levels of government during the planning and construction of the Whitaker Intermodal Terminal. Here, an overview of these conflicts is provided, but it is not the intent to detail each and every one.

The first major conflict between the parties occurred in 1996, when the City of Austell denied Norfolk Southern's rezoning request on the small parcel. In addition to the projected noise that the facility would create, residents also expressed concerns regarding traffic. Norfolk Southern estimated that within 10 years, as many as 3,542 trucks would enter or leave the yard on a peak weekday—147 per hour (Atlanta Journal and Constitution 1996). Norfolk Southern took the issue to Federal Court, using the Interstate Commerce Commission Termination Act of 1996 (ICCTA) as support for its position that local zoning and state regulations are preempted when interfering with interstate commerce (Faga 2006, 48).

Around the time of this lawsuit, Norfolk Southern belatedly began putting together an internal team to manage public stakeholder issues. Up until this time, Mr. Harrell of Norfolk Southern, said that he was basically performing such activities by himself. On the other side, the community decided that the most effective response was "stonewalling" and that acknowledging or discussing the project would undermine their opposition to it (Faga 2006, 48).

In summer of 1997, Norfolk Southern applied for a wetlands permit from the U.S. Army Corps of Engineers (USACE). It also had to have a review conducted of how its proposed facilities would potentially affect neighborhoods in Clarksdale, which were on the National Register of Historic Places (Faga 2006, 48).

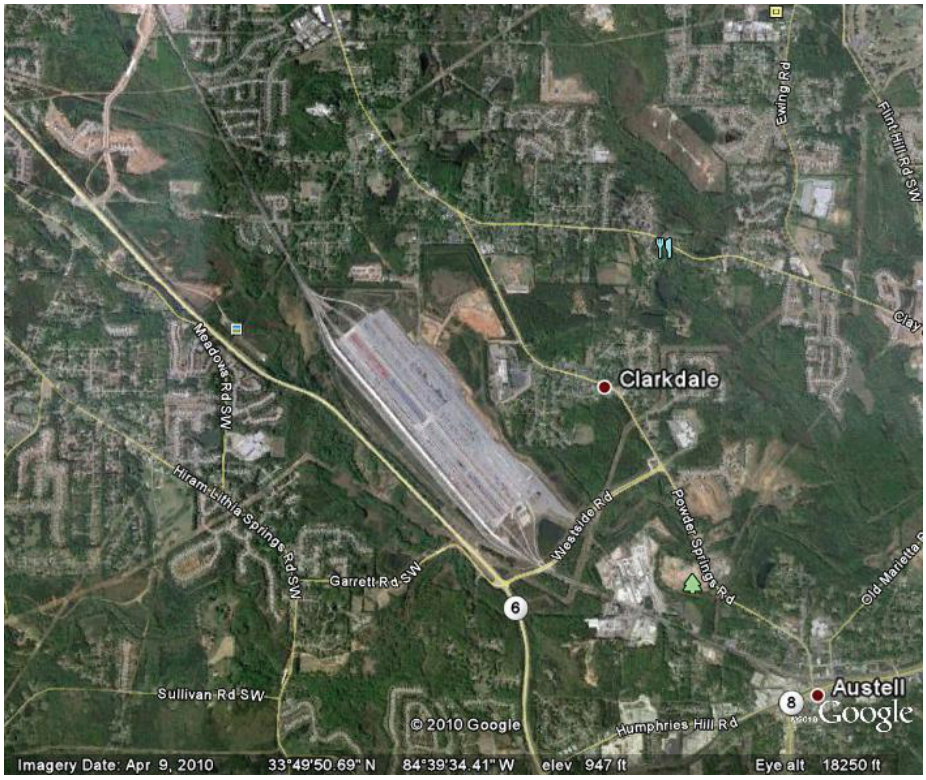
In August 1997, Federal judge Robert L. Vining ruled that, under the preemption authority conferred by ICCTA, local governments lacked authority to block construction of the facility (Faga 2006, 48). After this decision, the City of Austell realized that the facility could be built without local approval and its construction was inevitable. Therefore, the City decided to negotiate and settle with the railroad. According to Mr. Harrell, Norfolk Southern donated land for recreational and other purposes and the City issued necessary permits and closed some city streets on the site. However, other municipalities (including Clarkdale and Powder Springs) and Cobb County still opposed the project.

In January 1999, the USACE issued conditional permits for the project. Norfolk Southern agreed to enhance buffers between the facility and residential areas, reconfigure lighting for the facility and perform additional noise monitoring. According to Mr. Harrell, construction began in October 1999. However, Cobb County filed a lawsuit to stop construction. In an October 2000 civil trial in Cobb County, the jury decided in favor of the railroad, and in Spring 2001, Cobb County finally gave up its opposition to the project after spending $2.2 million on lawsuits. Norfolk Southern agreed to operate the yard at only 40 percent of capacity in the first three years and the parties agreed to reassess the impacts of the facility then (Faga 2006, 49).

Current Operations

Service began at the John W. Whitaker Intermodal Terminal in July 2001, with its formal dedication occurring in October 2001. Figure E-7 (GoogleEarth 2010) shows the facility as of April 2010. The 450-acre Whitaker Intermodal Terminal has been recognized as the largest intermodal facility east of the Mississippi River. It serves as the Southeast hub of Norfolk Southern's hub and spoke system and provides service for the ports of Charleston, Savannah, Miami and Jacksonville. The facility handles a mix of domestic and international freight (Metro Atlanta Chamber 2011).

FIGURE E-7
WHITAKER INTERMODAL TERMINAL, APRIL 2010



Conclusion

The creation of new intermodal facilities at Joliet and Austell represented relocations into suburban areas that were more amenable to the operations and growth of the facilities. Nevertheless, the examples show that, while suburban intermodal yard locations have relatively lower impacts on surrounding communities, the impacts on communities must still be addressed. While the timelines for these projects from conception to completion are comparable, they faced significant differences in how they developed. The Joliet facility had a development course that, while not free of disputes, avoided the legal battles that plagued the development of Austell. The development of intermodal hubs at Joliet and Austell provide insights into how differences in situational factors, and how the actions of involved stakeholders shape the process and outcomes of such projects.

Perhaps, the primary situational factor that distinguishes these projects is the impetus for the development of the site. In the case of Joliet, it was the public sector that initiated the brownfield redevelopment of an abandoned military facility for the purpose of local economic development to replace the jobs lost through the base closure. In fact, a redevelopment authority, JADA, was established to plan and actively pursue redevelopment of the site. In turn, JADA formed a partnership with a private developer, CenterPoint Properties, to accomplish the redevelopment. In the case of Austell, it was the railroad that initiated the project, creating the prospect of a large industrial site being located in the midst of small communities. While the leadership of the town government was supportive of the project, the town itself had not yet embraced the concept when the project was officially announced. This led to significant legal challenges stretching from 1996 to 2000.

Another important situational factor distinguishing the projects is the proximity of the sites to potentially incompatible land uses. In the case of Joliet, the site was relatively isolated from residential areas and other potentially conflicting land uses. Due to its prior function as an ammunition plant, the site already had significant buffering from residential populations. In contrast, the Whitaker site was closer to incompatible land uses, including its proximity to the historic district in Clarkdale.

Regarding the contribution of stakeholder activities to the process and outcome of the respective projects, arguably the most significant difference between the projects was the effort at communication and cooperation among stakeholders. This difference is related to the situational factors noted above and is also a matter of circumstance (e.g., based on initial feedback, Norfolk Southern thought they had buy-in from relevant stakeholder groups).

From the start, the Joliet Arsenal redevelopment effort encouraged communication and consensus-building among levels of government, citizenry and developer interests. This was largely fostered by the establishment of JADA. According to Michael Mullen of CenterPoint, extensive communication among the various parties involved was essential for the success of the project:

> Extensive communication led to a determination of the most beneficial use of the land for both Will County and the entire metropolitan Chicago region. During the pre-planning period, a

> series of open meetings with the people of Will County provided public opinion regarding the development plan (Mullen 2005, 2).

In the case of Austell, efforts at communication and cooperation were relatively minor at the start. This was partially tied to the hostile response that had been received by a previous land developer who had tried to rezone the property as heavy industrial. However, this miscalculation turned out to be a significant factor in determining the course of the project. Another factor that likely led to poor communication on the part of local citizens was that the effort initiated with the railroad and was not something that the community sought (in contrast to JADA). In the view of Barbara Faga, whose firm was hired by Norfolk Southern as a consultant on the project, a better outcome could have resulted had there been better lines of communication between the parties:

> It is safe to say that Clarkdale could have gained much more by working with the railroad. If a project appears to be moving forward, the first thing neighborhoods should do is climb on board and get their fair share. Otherwise, no one is going to hand it to them. That said, Norfolk Southern's early lack of engagement with the public short-circuited the process from the start. The railroad viewed public opinion as peripheral to its efforts to get the project underway, and only came to grips when the opposition became troublesome. The railroad got its project built, but by failing to engage the community early, the costs in both time and legal fees were extensive. By refusing to engage in any meaningful discussion or compromise, residents who opposed the rail yard deprived themselves of concessions that would have benefitted their neighborhood, their property values, and their lifestyles. In this case, honest dialog between the two parties could have resulted in a better outcome for both (Faga 2006, 52).

Differences in situational factors and the efforts at communication and outreach between the Joliet and Austell projects can be seen as primary explanations for the degree of cooperation versus conflict between developers of the facilities and the communities in which they are located. Again, the timelines of the projects are not all that different, but stakeholder interaction and efforts in the Joliet case can be characterized as largely cooperative while, in the case of Austell, such activities were largely adversarial. While both projects ultimately came to fruition, these differences had a significant impact on the process, and the time and resources expended to complete the projects.

Figure E-8 is a timeline of the Joliet Arsenal redevelopment. Figure E-9 is a timeline of the Whitaker Intermodal Terminal development.

FIGURE E-8
JOLIET ARSENAL REDEVELOPMENT TIMELINE

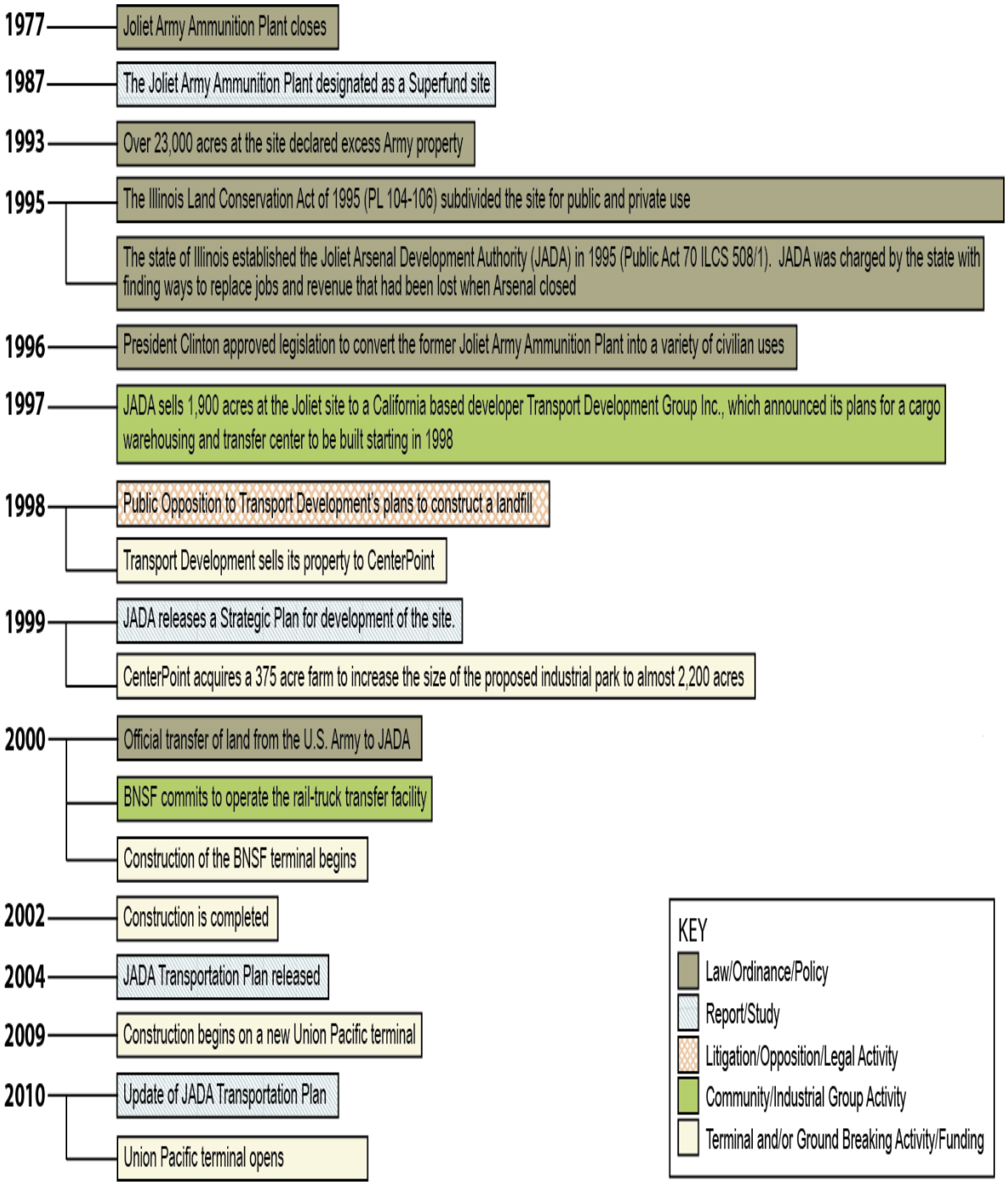
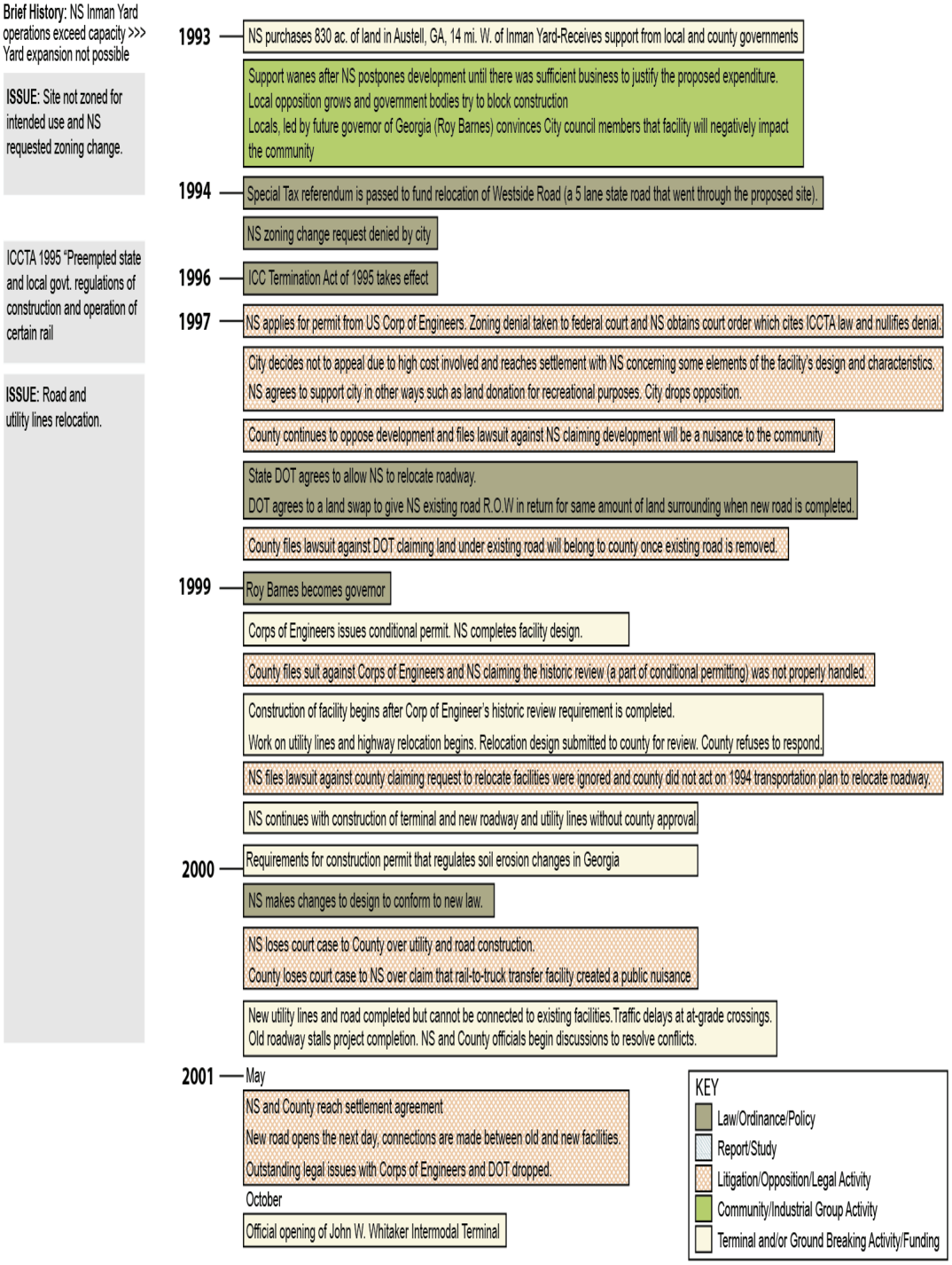


FIGURE E-9
WHITAKER INTERMODAL TERMINAL TIMELINE



APPENDIX 1

Cargo Container Facility Checklist

____ 1. Does the site have sufficient access from public right-of- ways?

____ 2. For separation distance, is the cargo container more than 1000 feet from any residentially zoned property?

____ 3. Does the facility have adequate insurance and can provide a certificate of insurance prior to the issuance of a special use permit?

____ 4. Is the location of the facility in the most intense industrial/manufacturing zoning district?

____ 5. Have you submitted a lighting plan for the site?

____ 6. Is the lot size a minimum of 20 acres?

____ 7. Does the proposed paving consist of asphalt, concrete or other approved materials?

____ 8. Is the amount of off-street parking spaces proposed at least one per on-site employee?

____ 9. What type of water system are you using (well and septic, municipal, etc.)?

____10. Does the site plan provide adequate means for emergency vehicles to access cargo containers?

____11. Is proper signage used?

____12. What type of materials is being stored?

____13. Has a site plan been included?

____14. Do all buildings meet height requirements?

____15. Has a traffic study been submitted?

____16. Has a landscape plan been included?

____17. Does your facility have technology systems to monitor/track movement of cargo containers?

APPENDIX 2

AN ORDINANCE REGULATING THE LOCATION AND USE OF CARGO CONTAINER FACILITIES FOR GOVERNMENTAL UNITS WITHIN WILL COUNTY

Statement of Purpose

The objective of this ordinance is to regulate cargo container facilities throughout Will County, referred to herein as the "County", and municipalities as defined herein. Governmental units refers to the County and each municipality, respectively. These facilities should meet the following purposes:

To provide for safe and orderly storage, staging, and maintenance of cargo containers in a manner that minimizes the noise, dust, traffic congestion, aesthetic blight and other adverse environmental impacts of such a use upon the participating governmental units.

To ensure that the cargo container facilities are operated in a safe manner based upon such factors as the permitted height of stacking of such containers, the cargo within the containers, the location and surface used, methods of securing the containers so as to prevent safety hazards, and accessibility for emergency and maintenance equipment.

To ensure adequate visual screening and landscaping of cargo containers from the public right-of-ways and adjacent properties is provided.

To ensure that the site is of sufficient size to accommodate the clean, safe and orderly storage and maintenance of cargo containers with adequate lighting and signage, in accordance with this ordinance.

SECTION 1: DEFINITIONS: The following definitions shall apply to this ordinance.

1. **Cargo Containers**: Means an industrial, standardized reusable vessel that was:

a. Originally, specifically or formerly designed for or used in the packing, shipping, movement or transportation of freight, articles, goods or commodities, and/or,

b. Designed for or capable of being mounted or moved on a rail car, and/or,

c. Designed for or capable of being mounted on a chassis or bogie for movement by truck trailer or loaded on a ship.

3. **Materials stored**: Materials stored in the cargo containers shall not include any material that is required to be placarded as Class 7 (radioactive materials) according to the U. S. Department of Transportation (DOT) Emergency Response Guidebook (ERG). All other materials stored at the facility should be properly placarded according to the ERG.
4. **Minimum Lot Size**: Cargo container facilities shall have a minimum lot size of twenty (20) acres.
5. **Noise**: Cargo container facilities shall make every effort to contain noise within the site. In the event noise becomes excessive, it shall be treated accordingly as a public nuisance violation in accordance with the governmental unit's ordinances.
6. **Paving**: Cargo container facilities shall be paved in accordance with each governmental unit's standards, including drainage and storm water detention. The paving must consist of asphalt, concrete, or other materials found to be acceptable to the governmental units. Gravel, grindings, or tar and chip surfaces are not allowed.
7. **Parking**: No portion of any required off-street parking or loading/unloading areas shall be used for the storage of cargo containers or similar storage devices. The minimum amount of off-street parking spaces shall be one per employee, but not less than six (6) spaces, and one space per 500 sq. ft of gross floor area of any structure located on site.
8. **Racking Height**: Racking of a chassis shall be limited to fifty-seven (57') feet in height. When a racked chassis exceeds thirty (30') feet in height, an additional one-foot (1') shall be added to all setbacks (from property line) for each additional one-foot (1') of height for the racked chassis.
9. **Screening and Landscaping**: Screening shall be provided within a landscape easement, a minimum width of 100-feet, adjacent to public right-of-ways and non-industrial zoning districts. Screening shall be a combination of fencing, berming, natural vegetation and landscaping in accordance with the governmental unit's standards. A berm shall contain a 3:1 slope and a minimum height of fifteen (15) feet. Additional landscaping may be required around the entire perimeter of the facility, subject to site plan review by the governmental unit. A landscaping plan must be submitted in conjunction with a special use permit.
10. **Separation distance**:
 a. No storage of a cargo container or a chassis shall be closer than 1000 feet from any property zoned or used for residential land uses or be stored closer than thirty (30) feet to any existing structure or building on site.
 b. No side-by-side grouping shall exceed twenty (20) containers or twenty (20) chassis in width and no end-to-end grouping shall exceed two (2) containers or two (2) chassis in length. Thirty (30) foot paved access drives shall be maintained at all times on all sides of a grouping.
11. **Signage:** No signage, other than company identification logos, shall be allowed on any cargo container unless approved in accordance with each governmental unit's sign ordinance.

12. **Site Plan**: A site plan must be submitted in conjunction with the special use permit.
13. **Stacking Height Cargo Containers**: Cargo containers shall not be stacked more than three units high. When stacked, an additional thirty (30) feet shall be added to all setbacks for each additional level of stacked containers.
14. **Stacking Height Chassis**: Empty chassis shall not be stacked more than five units high.

SECTION 4: CARGO CONTAINER MAINTENANCE FACILITY: Any business that engages in the maintenance and repair of cargo containers, not located within a storage facility, that removes containers from the chassis, shall be subject to the same requirements as a cargo container facility. This may include facilities or operations engaged in the conversion of cargo containers for a secondary use or sale.

SECTION 5: CONTAINER MODIFICATIONS**:** Cargo containers may not be modified or retrofitted for on site habitation. Containers shall be prohibited from having windows, heating and cooling, plumbing, or multiple entrances. Cargo containers are allowed to have electric and ventilation systems installed that would be necessary to meet the minimum codes and standards for lighting and air circulation for storage purposes.

SECTION 6: FIRE SUPPRESSION AND INSURANCE**:** All cargo container facilities must provide adequate means for fire and emergency vehicles (as approved by the governmental unit's fire protection agency) to access cargo containers both on and off a chassis in the event of an emergency. All facilities engaged in storage and stacking, must carry adequate insurance and provide a Certificate of Insurance prior to issuance of a special use permit.

SECTION 7: STRUCTURAL INTEGRITY, SURETY FOR REMOVAL:

1. Any cargo container stored or kept on property under the jurisdiction of the governmental unit shall be safe, structurally sound, stable, and in good repair.

2. Any Cargo container that becomes unsound, unstable or otherwise dangerous shall be immediately repaired or removed from the property where kept, subject to the governmental unit's requirements.

3. Any cargo container stored or kept in violation of the governmental unit or any municipalities' ordinances shall be deemed a dangerous condition and a public nuisance and may be immediately removed by the governmental unit.

4. Any cost or expense associated with the removal of the violating cargo containers is the responsibility of the property owner. All associated costs

including but not limited to legal fees and court cost, shall constitute a debt due and owed to the governmental unit and shall be recordable as a lien upon the land of the cargo container storage facility and/or property owner.

SECTION 8: EXISTING CARGO CONTAINERS FACILITIES: Any cargo container facility which existed lawfully on a parcel at the time of the adoption of this ordinance, or of any subsequent amendment thereto, shall be removed from the property within six (6) months of the adoption of this ordinance, unless such cargo container facility meets the requirements of this Ordinance or a special use permit approved by the governmental unit.

SECTION 9: PAYMENT IN LIEU OF TAXES: The governmental unit, as a condition of a special use permit, may require a payment in lieu of taxes (P.I.L.O.T).

SECTION 10: DEDICATION OF RIGHT-OF-WAY: Cargo container facilities shall dedicate right-of-way to the governmental unit for public highway and other public purposes. The dedication shall be in a form acceptable to the governmental unit and shall be made at no expense to the governmental unit.

SECTION 11: RESPONSIBILITY FOR PUBLIC IMPROVEMENTS: Cargo container facilities shall design and install, at no expense to the governmental unit or each governmental unit, public improvements adjacent to the facility at the time and in the manner specified by the governmental unit in conjunction with the development or subdivision of the Parcel, whichever occurs first. The improvements shall be engineered, reviewed, approved and installed according to the procedures and conditions set forth by the governmental unit.

SECTION 12: This Ordinance is severable and the invalidity of any portion hereof shall not be deemed so as to invalidate the remainder.

SECTION 13: This Ordinance is strictly intended to only make those amendments specified herein. No other amendment or repeal is intended or made hereby.

SECTION 14: This Ordinance shall take effect immediately upon its passage.

PASSED this _____day of _____, 20___.

APPENDIX F

CASE STUDY: ATLANTA REGIONAL FREIGHT MOBILITY PLAN

Introduction and Background

Atlanta is an important regional and national freight node for rail and trucking, with major railroads and important interstate routes traversing the region. Under the suggestions from the Atlanta Regional Freight Task Force, the Atlanta Regional Commission (ARC) and the Georgia DOT (GDOT) developed the Atlanta Regional Freight Mobility Plan (ARFMP or the Plan). ARC is the regional MPO, covering a 10-county region, and has authority to structure and develop plans, and in some instances, finance facilities. Issues addressed by ARC include land use, disposal of solid waste, water management and conservation, law enforcement agencies, planning for provision of health, and feasibility of consolidation of common services of political subdivision.

The ARFMP study began in October 2005 and was completed in early 2007. Funding was provided by ARC and GDOT. The study started shortly after the release of a study by the State Road and Tollway Authority suggesting that urban congestion could be substantially cut by converted HOV lanes to truck-only toll lanes (Frankston 2005). The Plan later received an award from the Association of Metropolitan Planning Organizations for is breadth (Hart 2008).

The ARFMP was to be a complete documentation of the freight sector within the Atlanta area, covering everything from mapping the network to providing policy analysis and recommendations. The Plan was the region's first comprehensive examination of goods movement and freight mobility. The Plan's goals were to "enhance regional economic competitiveness by providing efficient, reliable and safe freight transportation while maintaining the quality of life in the region's communities." Plan objectives were (Atlanta Regional Commission 2008b):

- Facilitation of understanding of freight mobility to the region's economy
- Development of dialogue between public and private sector for freight needs and strategies
- Integration of freight considerations into the public planning process
- Identification of the regional freight system; and
- Development of a goods movement action plan driven by data analysis and stakeholder input

The development of the Plan was considered as "essential to the identification and prioritization of improvements that accommodate mobility of both people and good while mitigating the negative impacts on congestion, safety and communities" (Atlanta Regional Commission 2008b, 1).

The Plan shows significant awareness of problems related to encroachment, giving much needed attention to land use compatibility issues. Five case studies were used to evaluate the potential for future land use conflicts. In order to accomplish the goals of the ARFMP, ARC solicited the input of various private sector entities, from major trucking companies to distribution center

operators. The case studies focused on identifying land use conflicts as well as elements that were considered to be working well in the region. The plan also reviewed environmental justice issues and impacts that are often associated with freight facilities and corridors. The environmental justice analysis reviewed the externalities associated with freight such as noise, emissions, air quality, and safety concerns.

Atlanta's freight planning effort is made up of not only the final Plan report, but also of additional supporting documents that led to the finalized Plan. The Plan's development was assisted by committees that were set up to provide input. Further guidance was delivered by the Atlanta Freight Task Force, whose participation was broadened to include: steering and technical committee guidance, participation in a goals and objectives, input into project selection and prioritization processes that were the output of the ARFMP, and identification of quick-start projects. The steering committee met five times and the technical advisory committee nine times throughout the study's duration. The final report consists of chapters that:

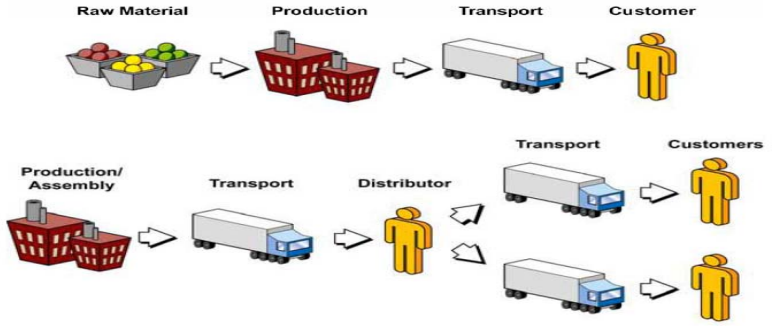
- Describe the stakeholder outreach
- Identify existing conditions
- Describe the economic role of freight transportation
- Develop freight forecasts
- Evaluate projects and strategies for improving regional goods mobility, and
- Provide plan strategies and recommendations
- Provide an implementation plan with identified projects to begin improving mobility

Freight Mobility Needs Assessment and Priority Freight Highway Network

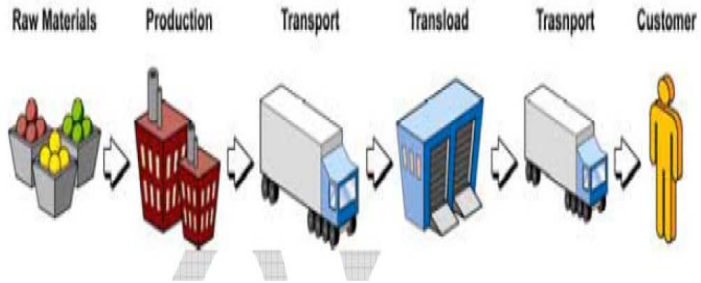
One critical element of the ARFMP was the Freight Mobility Needs Assessment (FMNA), an inventory of existing conditions within ARC's region. FMNA provided a baseline to analyze the economic impact of freight within the region, as well as land use and environmental justice impacts. Within this inventory, a profile of the region's freight system was created as well as a schematic of the modal segmentation of freight movements in the Atlanta region. For example, the regional rail market segment estimated that 18 percent of the rail freight in the region was transported via truck to/from a regional rail yard. This highlighted how important 'access' to rail yards and intermodal connections was for the overall freight network. The truck market segment was classified into a regional and local component and analyzed from this standpoint. The local truck market segment it was noted represents the least opportunity for strategically directing regional solutions and funding options due to the its use of the local roadways and the number of users that it had to serve throughout a very large region.

The ARFMP also developed schematics to show how distribution chains operated both internationally and regionally. These are illustrated in Figure F-1 (Atlanta Regional Commission 2008a, 17-18).

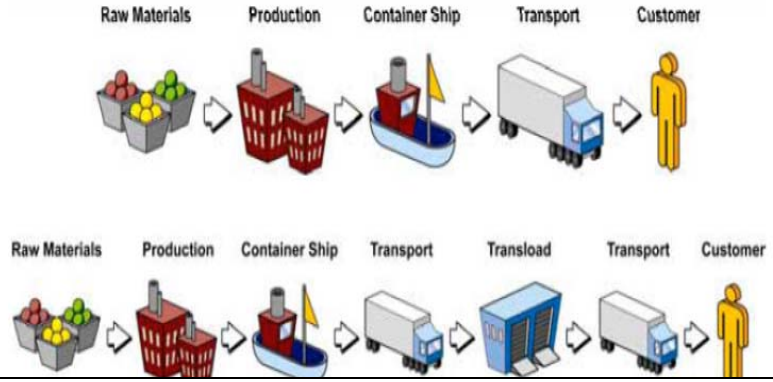
FIGURE F-1
DISTRIBUTION SCHEMATICS



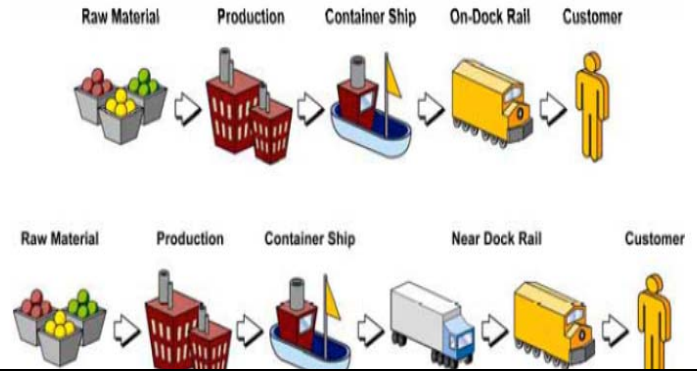
Domestic Distribution Local/Regional



Domestic Regional Distribution



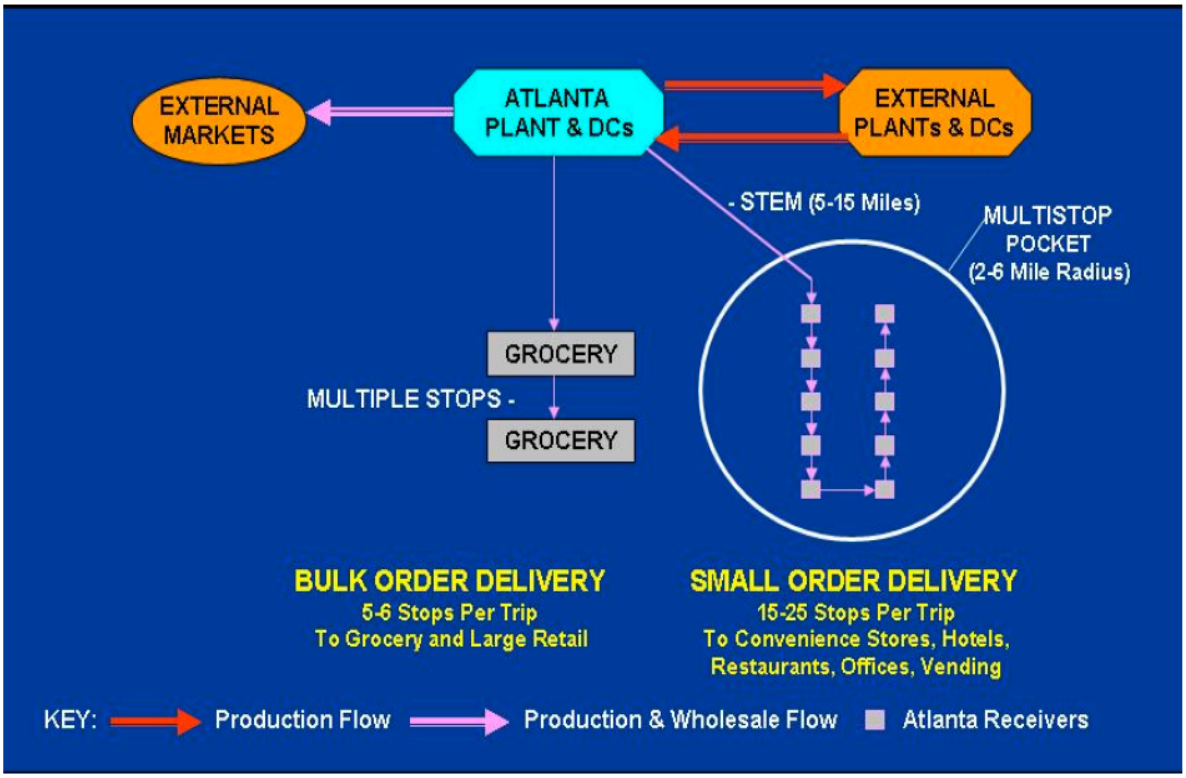
International Local Regional Distribution



International Rail Distribution

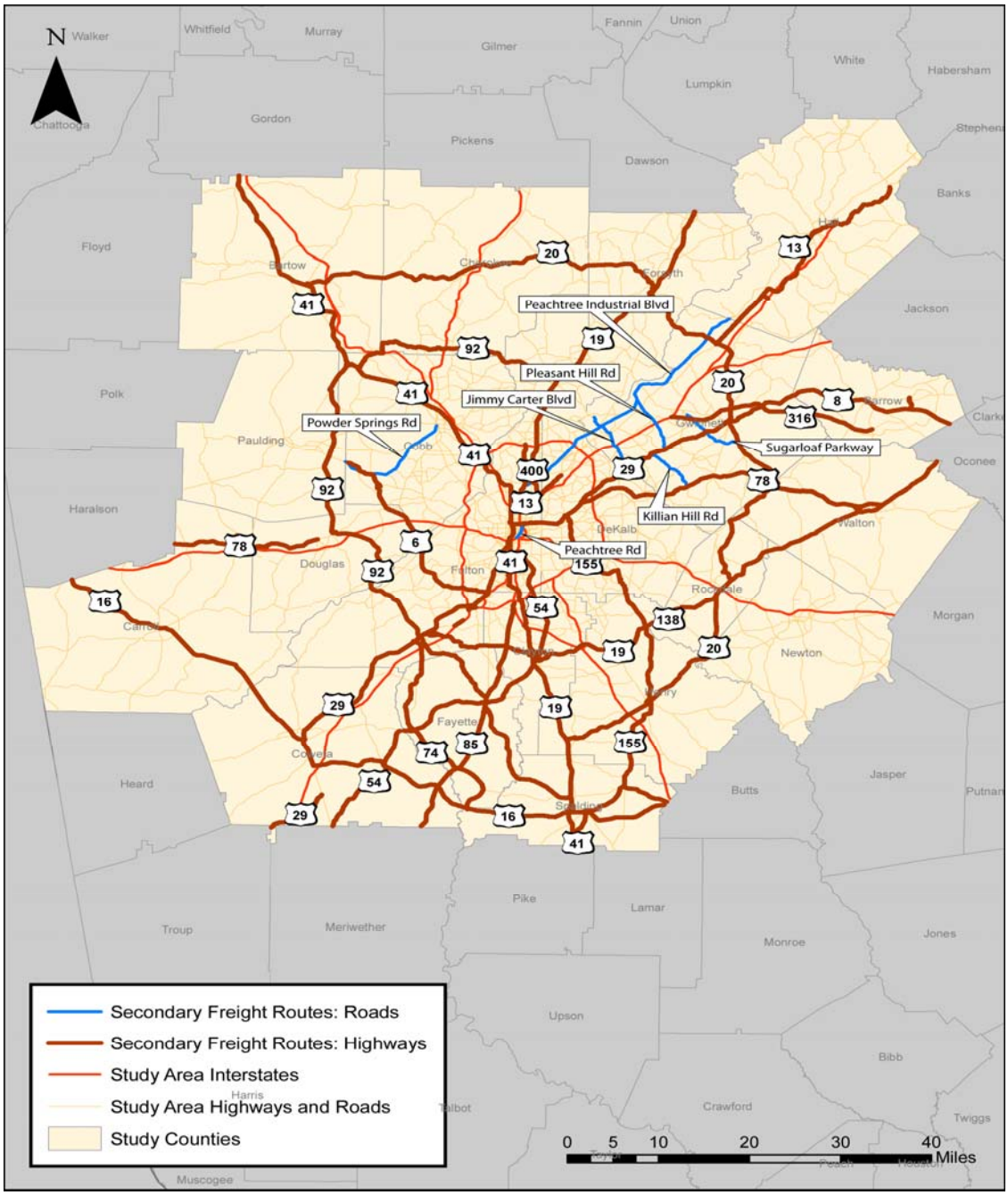
Figure F-2 (Atlanta Regional Commission 2008a, 123) shows a flow chart that depicts the food distribution supply chain.

FIGURE F-2
FOOD DISTRIBUTION SUPPLY CHAIN



The final ARFMP concluded that operational enhancements to regional and local highways, as well as local land use and zoning regulations, provided the most effective approach to improving mobility and reducing emissions. The Plan recommended a regional priority freight highway network. Figure F-3 (Atlanta Regional Commission 2008a, 84) shows the current strategic freight highway subsystem.

FIGURE F-3
ATLANTA REGIONAL STRATEGIC FREIGHT HIGHWAY SUBSYSTEM



Two rationales underpinned the recommendation for a regional priority freight highway network: (1) to focus the freight plan's scope, and (2) to guide limited resources. Figure F-4 (Atlanta Regional Commission 2008a, 22) shows the proposed Atlanta Regional Priority Freight Highway Network (PFHN).

FIGURE F-4
RECOMMENDED PRIORITY FREIGHT HIGHWAY NETWORK



The PFHN was based these criteria:

- Average annual truck volume
- Average annual truck percentage
- Connectivity to significant freight generator
- Designation as truck route
- Stakeholder identified route
- Intermodal connectors
- Role in terms of servicing local versus regional freight needs.

PFHN stem routes bear close relationship to economic geography and are routes for getting between businesses, as opposed to routes that businesses grew up around. This was considered a crucial consideration for network and land use management, because cross-town corridors from a trucking perspective are most efficient when they are not heavily laden with local turning traffic from roadside development. Congestion and bottlenecks were identified in the stakeholder interviews as barriers to economic growth,

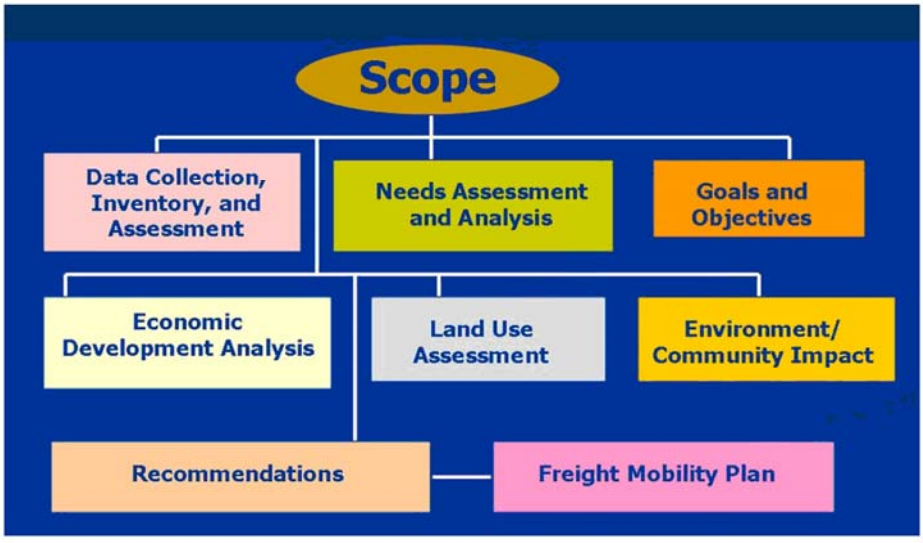
and as sources of critical conflict that arises. A distribution group, for example, noted that they have turned away business due to bottlenecks. Stakeholders provided detailed views of areas that had slow operations to assist in GIS mapping development. The stakeholders noted that the region's network of surface routes contribute to the region's congestion and air quality issues. Atlanta's road network is radial in nature. While north-south trips are relatively fluid, east-west trips are a major source of delay. The absence of adequate traverse surface arterials leads to over-use of the interstate system and resultant back-ups from off ramps and merging ramps back into local communities.

Assessing Land Use

The ARFMP looks at both non-industrial and industrial land uses to ensure a sustainable coexistence. For NCFRP 24's interests, the major focal points are the Plan's land use documentation and recommendations, incorporation of both public and private stakeholder survey responses, the cataloging of freight network and infrastructure within the Atlanta area (Atlanta Regional Commission 2008a, 43-46 and 67-68). Also important from the perspective of NCFRP 24 are ARFMP's recommendations regarding the development of freight-supportive land use guidelines at the local level starting with the development of a freight zoning regulation, site layout, and guidance on design standards as a quick reference guide for local planners.

Although the documentation of freight infrastructure and the inclusion of various stakeholders in the process are extremely important, the main component of the Plan of interest for purposes of NCFRP 24 is the focus on land use and encroachment issues. As Figure F-5 (Atlanta Regional Commission 2008a, 2) shows, the freight mobility plan and scope of land use assessment was a critical component that was reviewed.

FIGURE F-5
ARFMP SCOPE OF WORK



The "Land Use Evaluation" section (which is found within the Existing Conditions chapter) gives a brief overview of Atlanta's land use situation in terms of existing freight

conditions. It identifies how key freight corridors are experiencing encroachment by non-industrial uses, which is driving freight transportation-related services to the fringe of the city. It notes that with 'explosive' growth and land development, the ARC region faces major challenges in accommodating future freight facilities and associated movements, while preserving residential and commercial mobility. Key identified land conflicts include:

- Local attention to freight in the ARC region is currently inadequate to effectively address freight needs.
 - Specifically, intra-municipal and corridor-level impact considerations were considered to be de minimus.
- Current comprehensive planning and zoning tools do not take into account the unique nature of freight and industrial uses and, instead, focus on traffic volume and congestion associated with those types of uses.
- Few planning documents or processes discuss characteristics and impacts of freight-intensive land uses in terms of the actual conflicts that occur, mobility impacts, or quality of life impacts.
 - Without addressing the development of these types of facilities and their specific and unique characteristics, the potential for poorly-coordinated land use and negative impacts.
- Recognition that the design of communities, the transportation network and the region of goods movement can improve mobility and access for all.
- Predictability of where logistics and freight facilities will locate in the future is a function of just-in-time distribution and logistics management, land costs and availability, and access to corridors and intermodal facilities.
 - Therefore, it is possible to take a proactive approach to planning for inevitable growth in freight.
- Freight supportive land use is critical to sustaining the Atlanta region's mobility, economic vitality, and quality of life.

The land use section ends with a list of objectives for future transportation planning efforts, these are:

- Preserve freight mobility as the region continues to develop
- Coordinate freight and non-freight land uses and mobility needs
- Ensure adequate segregation and protection of different land uses
- Build goods movement and logistics needs into land development and site design (Atlanta Regional Commission 2008a, 43-45).

The Plan later focuses on discussing land use conflicts and encroachment of residential use upon freight areas in the "Land Use Conflicts" section (which is found in the Future Freight Forecasts and Needs chapter). The Plan highlights the need for local governments to adequately plan for the potential inclusion of freight transportation-related services regardless of whether these developments are currently expected.

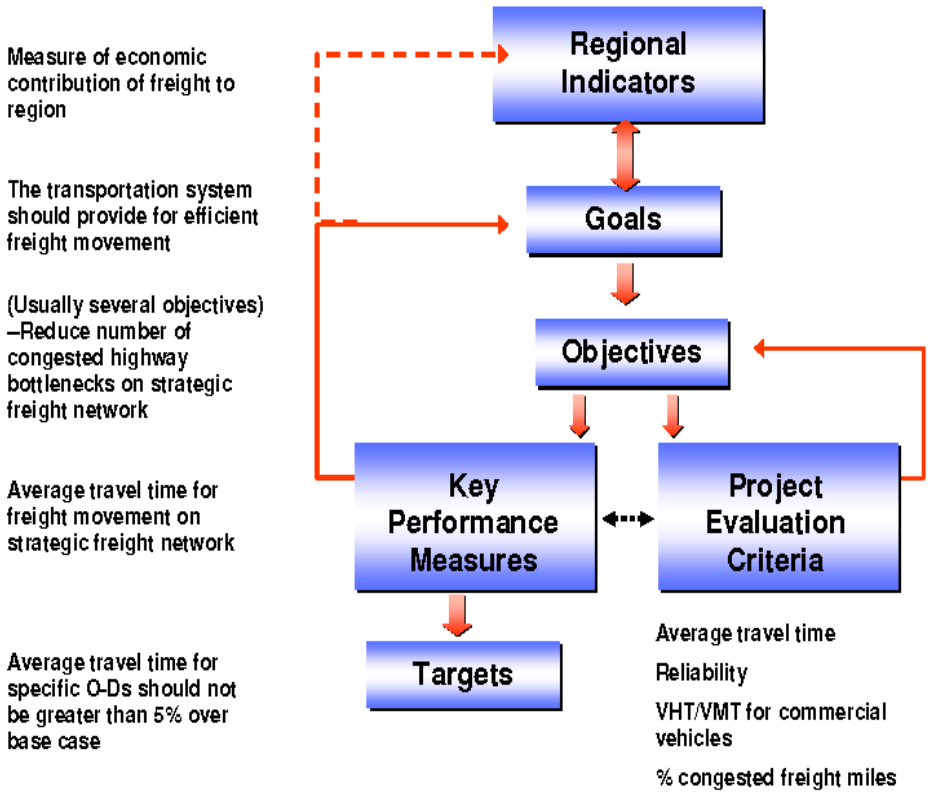
Two areas are reviewed within this section—encroachment of residential use into traditional industrial corridors/areas and freight district redevelopment. The encroachment subsection briefly discusses the impact of encroachment and land use conflicts upon freight transportation-related services. Such development, if done without

adequate considerations for freight needs, often leads to poor access for freight facilities with increased traffic during peak travel periods and mitigation controls that negatively constrain freight activities, such as noise abatement policies (Atlanta Regional Commission 2008a, 67-68). The freight district redevelopment subsection discusses current key areas of growth, identifies a few future areas of growth, and identifies existing freight and commercial areas that will need upgraded investments for future viability.

The Plan also highlights the need for education and influence efforts by ARC. It suggests that relaying documented benefits of freight transportation-related services will help reduce the ever-increasing NIMBY ("Not in My Backyard.") attitude. Additionally, because ARC doesn't have direct control over land uses, it needs to offer its resources to assist local governments in their planning efforts in order to influence a greater awareness of freight planning and land use considerations (Atlanta Regional Commission 2008a, 69-70).

The Plan incorporates a large GIS component to map freight facilities throughout the 10-county ARC region. As part of the needs assessment process, a set of performance measures was utilized to guide the evaluation of the proposed freight transportation plan for the region. Figure F-6 (Atlanta Regional Commission 2007b, 5) shows the performance measure framework that was utilized.

FIGURE F-6
PERFORMANCE MEASURES FRAMEWORK



Figures F-7 through F-12 (Atlanta Regional Commission 2008a) show a snapshot of the types of GIS mapping that was conducted and can be found in the both the ARFMP and FMNA documents.

FIGURE F-7
DISTRIBUTION CENTERS

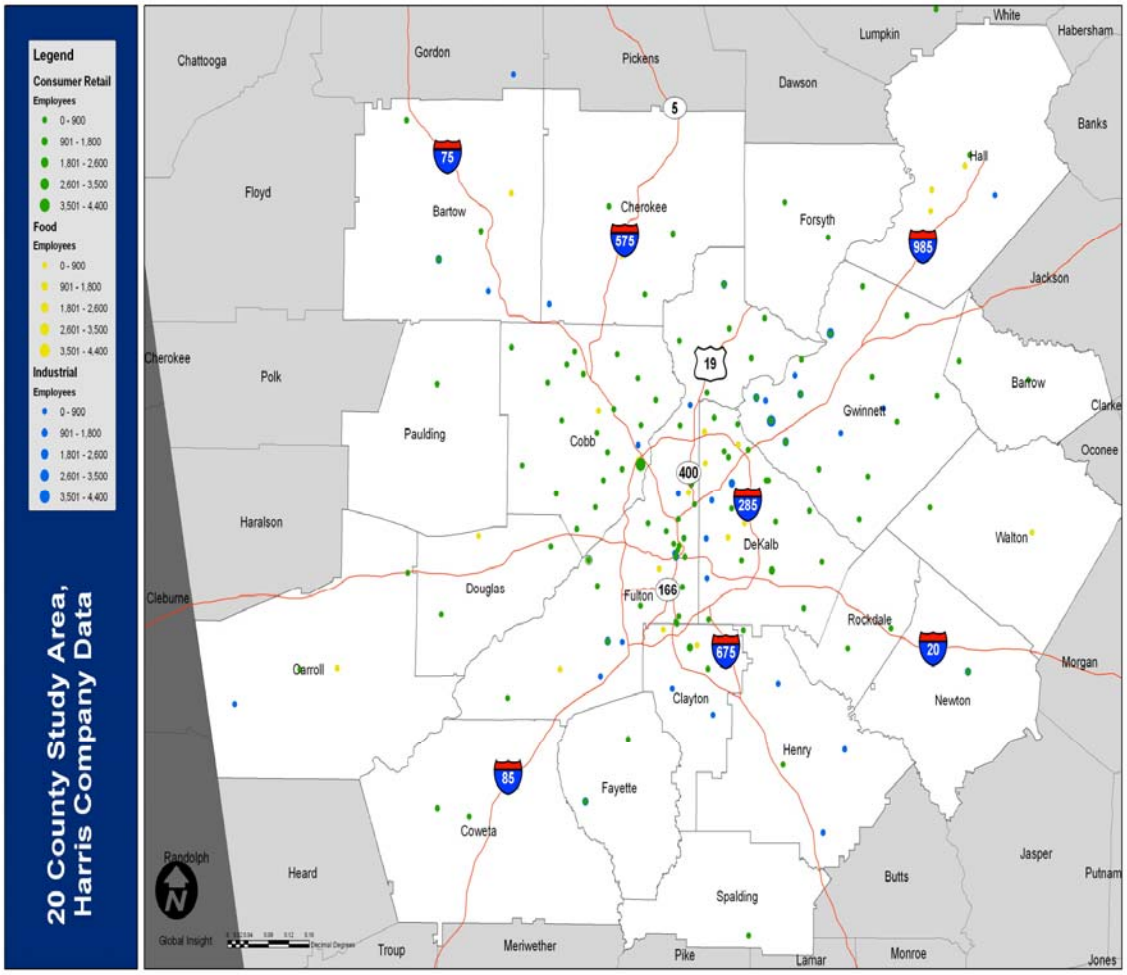


FIGURE F-8
AIR CARGO ACCESS ROUTES

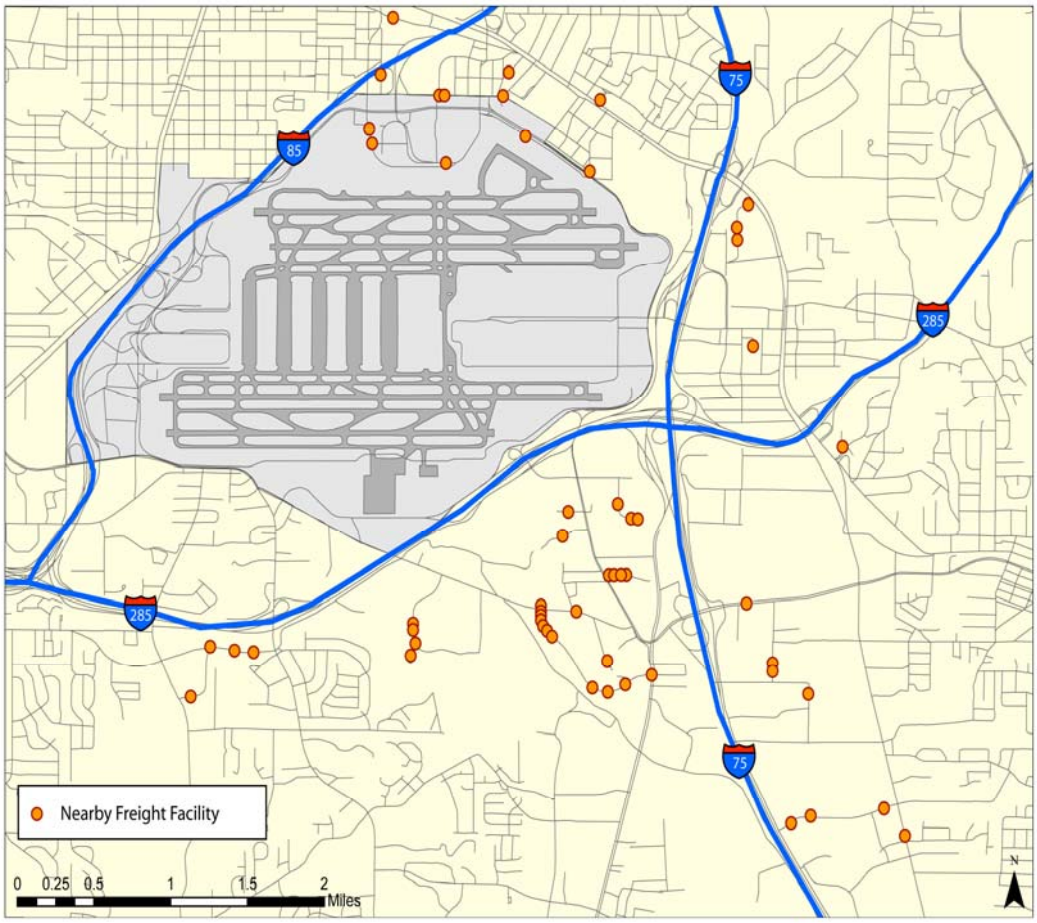


FIGURE F-9
MANUFACTURING FACILITIES

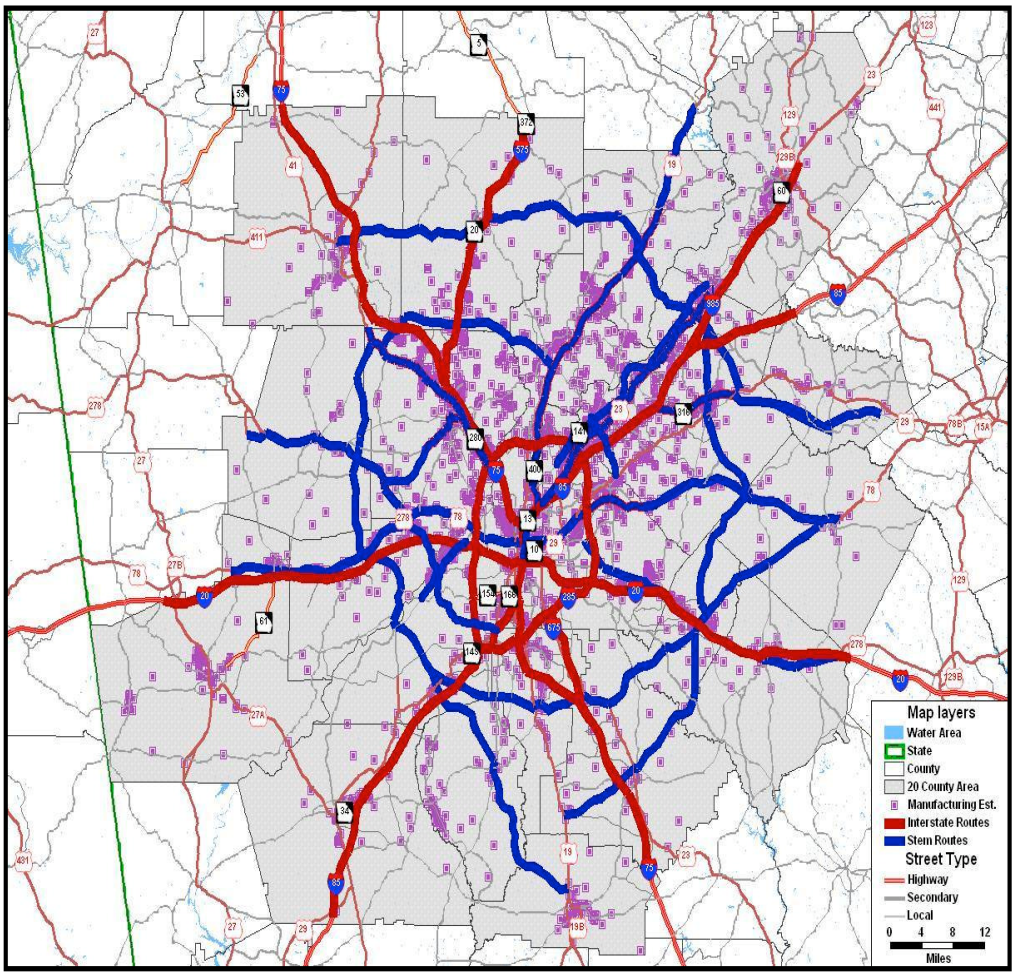


FIGURE F-10
FOOD SECTOR ESTABLISHMENTS

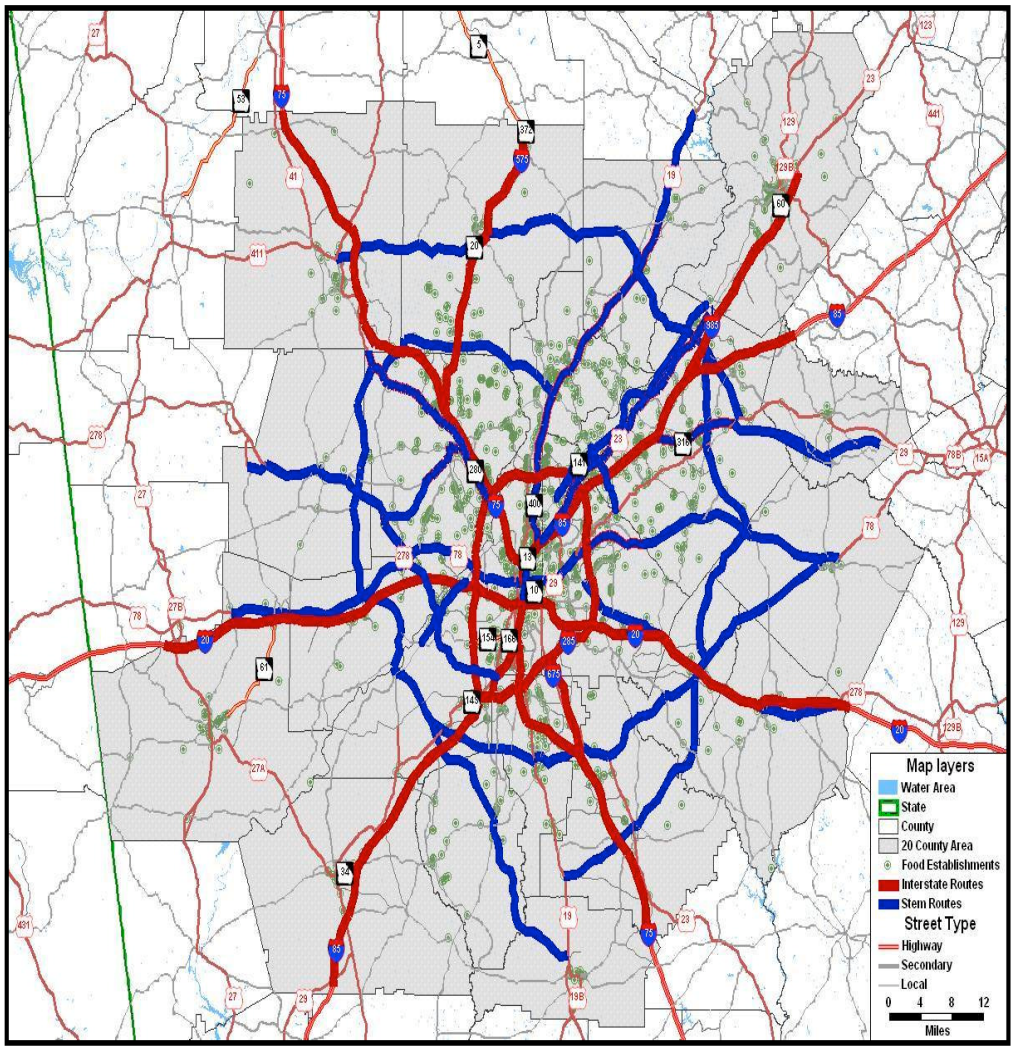


FIGURE F-11
FREIGHT HIGHWAY SUB SYSTEM AND TRAFFIC GROWTH BY ZIP CODE

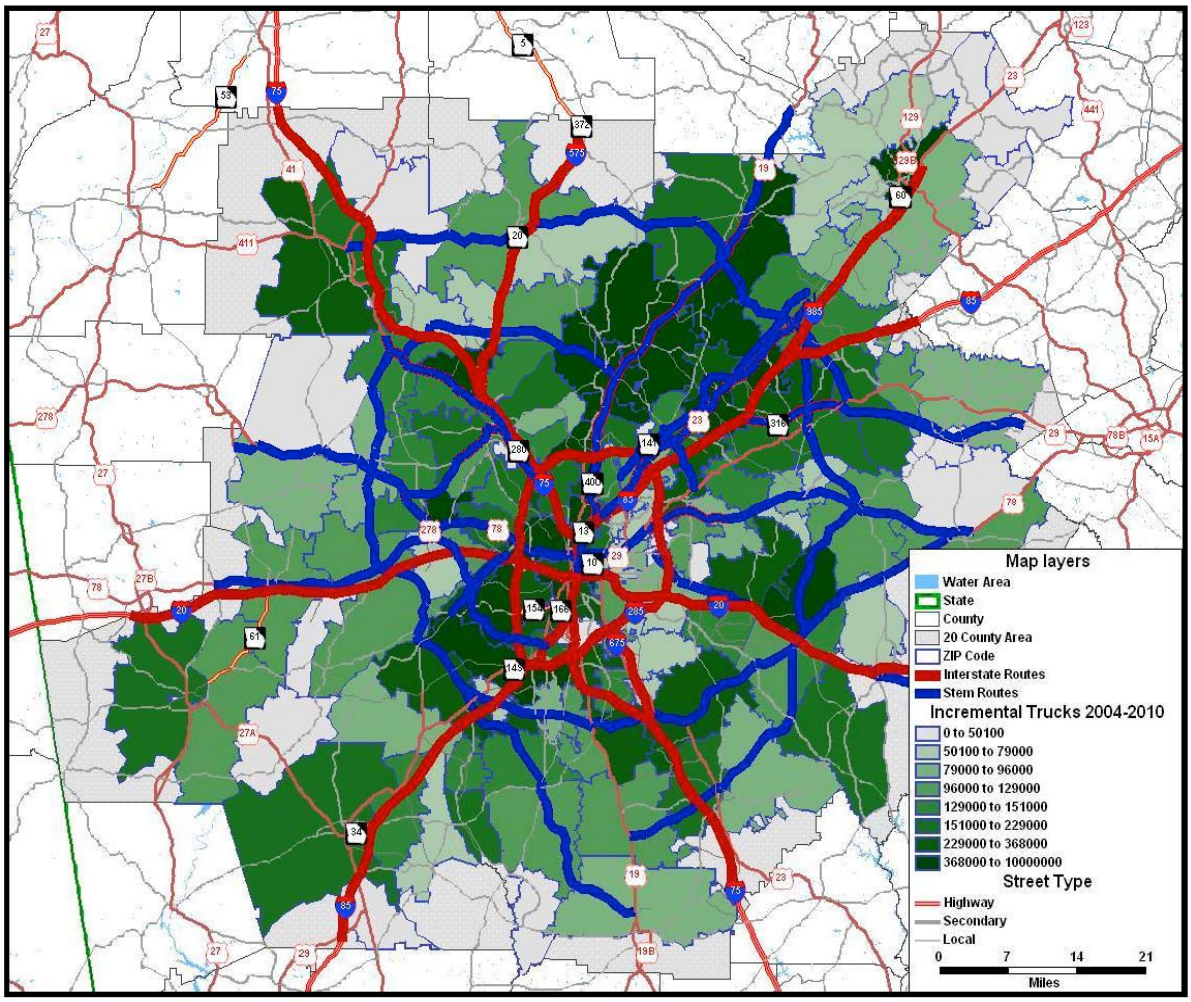
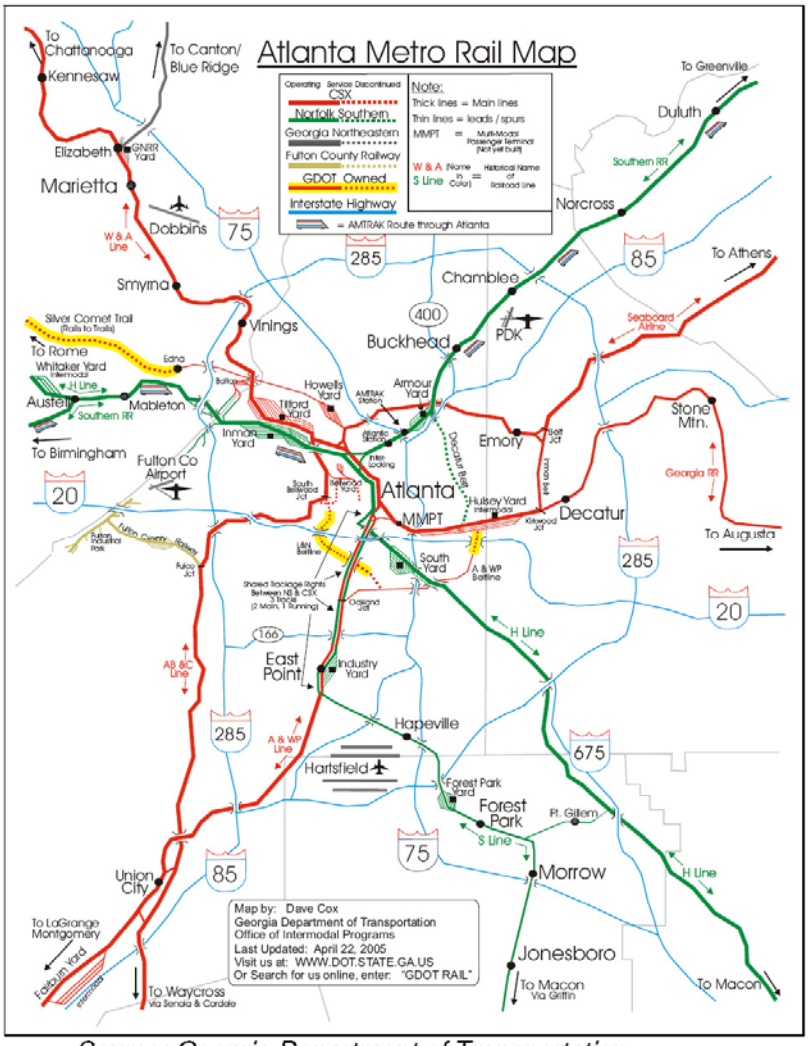


FIGURE F-12
REGIONAL RAIL NETWORK



Source: Georgia Department of Transportation

Plan Strategies and Recommendations

After the Plan's analysis of the Atlanta region's current freight situation, it goes through a screening process for potential strategies and recommendations. The screening process that was developed created types of projects and specific examples that were organized into 14 categories:

1. Mitigation of interchange bottlenecks
2. Maintain and enhance intermodal connectors
3. Addition of mainline rail capacity
4. Rail grade separation
5. ITS technologies
6. Management and operational strategies public sector

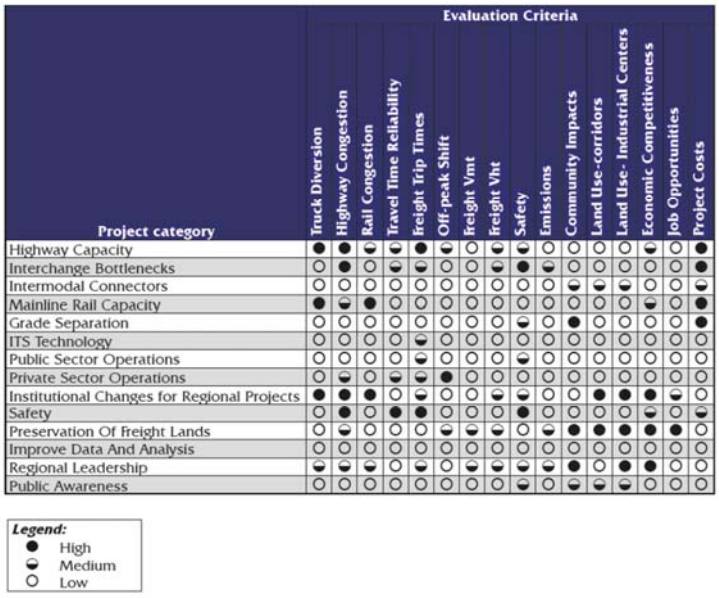
7. Management and operational strategies private sector
8. Preserve lands for freight use
9. Implement institutional changes to improve feasibility of freight projects of regional significance
10. Enhance freight network safety
11. Improve data and analytical methods
12. Promote regional approaches and leadership
13. Enhance public awareness of freight transportation
14. Expand highway infrastructure

Within this section is a list of questions asked during the screening criteria evaluation. This list provides some excellent questions that planning organizations and local governments can use when evaluating potential projects. Examples include (Atlanta Regional Commission 2008a, 80-81):

- **Community Impacts**: How much will the project or strategy reduce community impacts associated with goods movement along transport corridors and freight intensive areas, including those in dense areas?
- **Land Use Impacts – Transport Corridors**: How much will the project or strategy reduce land use impacts associated with goods movement along transport corridors?
- **Land Use Impacts – Intermodal/Warehouse/Distribution Facilities**: How much will the project or strategy reduce land use impacts associated with goods movement between intermodal yards, warehouse and distribution facilities?

Figure F-13 (Atlanta Regional Commission 2008a, 82) shows the screening process matrix.

FIGURE F-13
SCREENING PROCESS FOR PROJECT CATEGORIES



After the screening section, the report puts forth its recommendations. The beginning of the chapter outlines various aspects of projects that affect freight transportation-related services, such as planning and programming, land use planning, transportation planning, and stakeholder involvement. Included are directives to improve freight transportation-related services. Notable directives include (Atlanta Regional Commission 2008a, 83-84):

- Making freight an integral component of the regional planning and programming processes (Planning and Programming)
- Preservation of existing freight-intensive areas (Land Use Planning)
- Promotion of integrated logistic centers/freight villages—the clustering of freight uses
- Development and implement freight supportive land use guidelines (Land Use Planning)
- Need for foresight in long range transportation and land use planning, and the shared interests of the private and public sector (Transportation Planning)
- Incorporate county-level freight needs assessments and strategies into the country transportation plan

Specific policy and approach recommendations follow, including (Atlanta Regional Commission 2008a, 84-88):

- Provide local government freight-related training and capacity building
- Educate the public about the existence, role, and benefits of freight within the community
- Prepare a regional truck route plan and identify freight districts
- Incorporate the Land Use Coordinating Committee (LUCC) into the discussion in order to help identify opportunities to preserve freight-related areas and corridors
- Produce freight-related land use guides and site design standards
- Implement an off-peak delivery pilot program promoting off peak deliveries in key commercial areas

Lastly, the Plan puts forth an implementation plan that documents freight-related projects that should be undertaken, along with a description, cost estimate, and list of potentially responsible agencies for each project. Notable projects include (Atlanta Regional Commission 2008a, 108-119):

- Incorporating freight-supportive policies in future transportation-related plans, which include preserving current freight-focused land uses. This may include the promotion of land acquisition and private sector incentives for redevelopment of outdated or undesirable freight facilities.
- Adding “ex-officio” freight industry representatives to relevant committees, such as LUCC.
- Develop a freight planning newsletter.
- Coordinate with peer regions to exchange information, ideas, and strategies.
- More detailed studies of areas with land use conflicts and what can be done to protect freight land use.
- Preserve in-town terminals (Atlanta Regional Commission 2008a, 105).

The report notes that congestion mentioned by real estate advisors was not often factored into site location by distribution centers. One real estate advisor addressed the issue by avoiding a particular area of town if it was deemed that the distribution center would rely heavily on a known congested freeway (Atlanta Regional Commission 2008a, 43). The Plan does not further explore this interesting detail. Thus, a potential recommendation is to work with and educate real estate advisors about land use and location selection so that they can better-assist distribution operations in selecting more suitable locations. This could also be an opportunity to decrease the likelihood of a large operation moving into an area where incompatible uses currently "peacefully" coexist due to the relatively small size of current or former industrial tenants.

In summary, the Plan recognizes that "simply implementing larger infrastructure investments will not achieve the goal of both enhancing freight mobility and mitigating the negative community impacts associated with freight movement" (Atlanta Regional Commission 2008a, 72). It analyzes and puts forth various recommendations and directives, of which, many are specifically related to land use awareness when dealing with freight transportation-related services. Due to the ARFMP's completeness and keen focus on land use pertaining to freight transportation-related services, the Plan can serve as a model for other organizations to begin a freight planning and documentation effort.

Various studies and analysis were conducted prior to the final report, which were used in its formulation. Much of this information is contained within the *Draft Needs Assessment Report* (Atlanta Regional Commission 2007b) and the *Community & Environmental Impact Scan and Assessment* (Atlanta Regional Commission 2007a) reports. The latter is particularly impressive, as it provides five case studies on current and potential land use conflicts and encroachment potential within the studied localities.

Atlanta Freight Advisory Task Force

An important precursor to the development of the ARFMP was the establishment of the Atlanta Freight Advisory Task Force (FATF) in 2003. The task force was established as part of ARC regional planning process. The FATF meets quarterly, and its membership consists of public and private freight representatives, including railroads, trucking, airport, chambers of commerce and community improvement districts. The FATF goals were to:

- Improve goods and services movement in the region
- Improve reliability of goods movement
- Minimize the cost of goods movement
- Improve characteristics of transportation system for freight movement

Objectives for the FATF were to:

- Provide input on policies and improvements for freight mobility
- Identify freight mobility characteristics and needs
- Highlight the importance of freight to the region
- Improve safety of the transportation system
- Prioritize freight transportation needs and investments

GDOT has also commissioned a statewide freight committee, and this group is now developing a statewide freight plan.

Truck Route Master Plan

As already noted, the ARFMP found that the region has discontinuous routes serving freight truck traffic. Many truck routes are not logical in that they may stop at jurisdictional boundaries or conflict with restrictions placed in adjacent communities. It was also found that the official truck route map for Atlanta had not been formally updated in over 25 years. Additional study was recommended to address issues pertaining to truck routing and operations. Figure F-14 (Atlanta Regional Comission 2008a, 65) shows the designated truck routes in the region prior to the study.

This follow-up activity included the development of a regional truck route network as well as associated policies and guidelines. It is known as the Atlanta Strategic Truck Route Master Plan (ASTRoMaP).

The objectives for this study included:

1. Implement follow-up recommendations from the Atlanta Regional Freight Mobility Plan to ensure that truck traffic is directed to roadways whose physical and operational characteristics can effectively accommodate truck traffic.

2. Identify a Regional Strategic Truck Route Network concept to direct and manage freight movement.

3. Identify supportive improvement strategies to implement the regional truck route concept, including identifying priority road-railway at-grade crossings for removal.

4. Develop access management best practices to protect freight corridors.

The truck route plan was issued in early 2009 and was adopted by ARC in June 2009.

Comments and Criticisms

The Atlanta experience shows that establishing a clear understanding of the regional freight network, its benefits, and the GIS mapping of facilities and corridors, is an expensive proposition. In 2005, ARC established a system to track regional, state, and local studies that were occurring in its 10-county area. This database is updated every quarter. As can be seen in Table F-1 (Atlanta Regional Commission 2008a), since 2005, $4 million has been spent developing freight studies and analyses for the Atlanta area. This does not include other studies that have focused upon specific corridors or the transportation plans that ARC has commissioned that include freight planning.

FIGURE F-14
EXISTING TRUCK ROUTES IN REGION

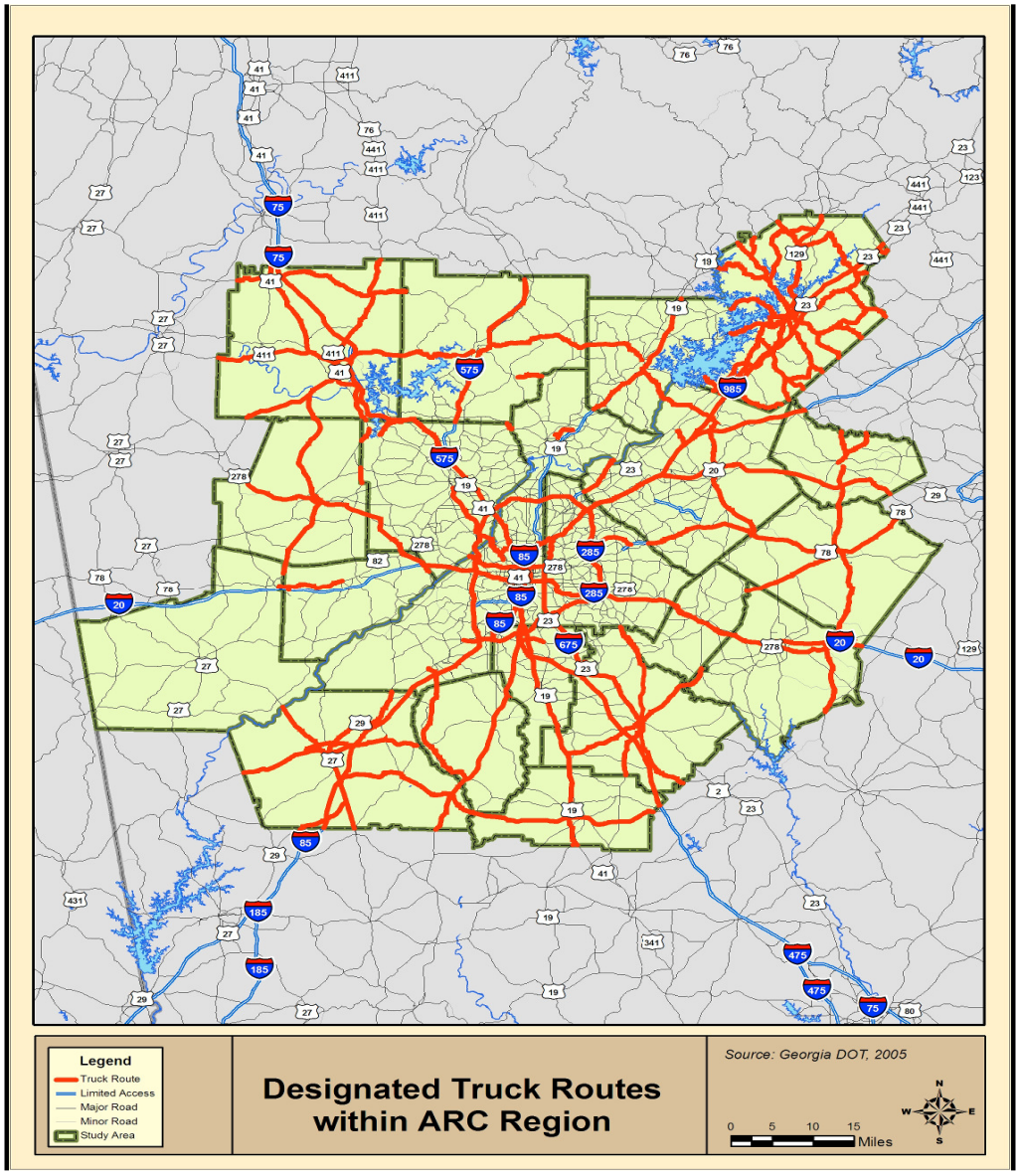


TABLE F-1
FREIGHT STUDIES CONDUCTED BY ARC

Study Name	Start Date	Cost	Contractor	Description
Regional Freight, Goods, and Services Mobility Strategy Study	2005	$1,000,000	Wilbur Smith	Comprehensive freight transportation plan for region.
Statewide Truck Lanes Needs Identification Study	2005	$1,000,000	HNTB	Investigate benefits associated with truck only lanes at a statewide level.
Atlanta Regional Strategic Truck Route Master Plan	2009	$500,000	Wilbur Smith	Develop regional strategic truck route master plan, including identification of supportive transportation improvement strategies.
Rail Facilities Simulation Planning Study	2005	$1,500,000	HDR & Parsons Brinkerhoff	Rail capacity study.

The ARFMP did not make any modal shift assumptions in its freight forecasting assumptions or its analysis. Therefore, planning and other criteria assumptions that may be utilized for comprehensive planning or other zoning applications could be flawed if, for example, a modal shift from trucking to rail occurred.

The study's focus was heavily weighted to trucking and, therefore, many recommendations may have been based upon a single-mode type focus. At the time the study was being undertaken, Atlanta was promoting a truck-only toll route across Atlanta, so one could question whether this played into the truck focus and recommendations of this study.

Finally, while this study is an excellent first step, out of the 118 pages of the final report, only five pages were formally listed as land use sections. On ARC's website a freight tab can be found under the transportation tab (Atlanta Regional Commission 2010a), but there is no freight tab under the land use tab (Atlanta Regional Commission 2010b). This illustrates the efforts that still need to be pursued to develop better lines of communication and understanding between the freight and planning communities.

APPENDIX G

REVIEW OF SELECT LOCAL AND REGIONAL FREIGHT INITIATIVES

As part of the NCFRP 24 research four geographically dispersed freight initiatives undertaken in the United States were reviewed: the Chicago Region Environmental and Transportation Efficiency (CREATE) program, MIZOD in Baltimore, the Atlanta Regional Freight Mobility Plan, and the Freight Action STrategy for the Everett-Seattle-Tacoma Corridor (FAST Corridor). The MIZOD and Atlanta initiatives are discussed in detail in Appendix C and Appendix F, respectively. In this appendix, we provide a brief discussion of CREATE and the FAST Corridor.

Chicago/CREATE

Chicago is one of the most important freight centers in the United States. Most importantly, it serves as the connection point between the western and eastern railroads and as a pivotal trucking node in the Midwest. Due to its expansive size and population, entities involved within Chicago came together to establish the Chicago Region Environmental and Transportation Efficiency program (CREATE). The program is a partnership between USDOT, Illinois DOT, City of Chicago DOT, and the Association of American Railroads, which encompasses the following area railroad entities within the project (CREATE 2010):

- BNSF Railway
- Canadian Pacific Railway
- CN
- CSX Transportation
- Norfolk Southern Corporation
- Union Pacific Railroad
- Metra (Northeast Illinois commuter rail system)
- Amtrak

CREATE's primary focus is to improve the area's rail system and the impact of freight transport upon the region's environment by proposing and managing freight transportation projects. The majority of the projects are focused on the improvement of known bottlenecks, elimination of at-grade railroad/street crossings, and system upgrades, all designed to reduce congestion and improve both economic and environmental performance of the area's network.

In addition to the CREATE effort, Chicago's various planning agencies also provide freight-related contributions to the area. The Chicago Metropolitan Agency for Planning (CMAP), the Chicago area's MPO, has instituted freight topics within its various reports and plans, including the 2030 *Regional Transportation Plan for Northeastern Illinois*. It also has a dedicated committee on freight, made up of various public and private entities, which has produced reports and studies that relate to the encroachment and protection issues. These documents will be discussed in greater detail in the next section. Lastly, the City of Chicago has also been freight-aware, producing a Chicago Downtown Freight Study to analyze freight issues within the downtown sector.

As noted earlier, CREATE does not attempt to influence policy matters other than pushing for system improvements to be funded and approved. It is primarily concerned with upgrading the Chicago area's railroad system through such efforts as at-grade separation, separating freight and transit lines, and upgrading the technical infrastructure to make the system safer and more efficient.

CREATE's relevance to the NCFRP 24 project is its accomplishment of bringing together the area's major players within the freight transportation arena. Before CREATE, individual railroads were reluctant to invest into the infrastructure, as it was deemed the impact and return would be too small per individual railroad. Coming together for CREATE helped all of the stakeholders realize the overall benefits and allowed for unified goals, which in turn improved the perceived return on investment based on the knowledge that the system as a whole was being improved (Booney 2009). It is in this respect that the coalition serves as a model to the rest of the nation, as it shows how public-private partnerships can be formed and how effective they can be in prioritizing freight projects in order to keep freight networks viable within a region.

Although no policy influence to ensure a reduction in encroachment upon freight facilities has been identified as a result of the effort, the group's work has resulted in millions of dollars being invested in Chicago's freight infrastructure, thus indirectly preserving many of its freight routes for the immediate future. Because the focus of the project is specific towards infrastructure adjustments, its influence on preventing future conflicts with Chicago's freight network is limited. The focus on freight operations and desire to improve existing freight corridors acts as a means to preserve freight infrastructure, but it does not provide assurance that future conflicts in terms of land use and incompatible coexistence will not arise, as this is outside the scope and ability of the group. Such responsibility would rest with assigned planning agencies to advance and local governments to execute.

Chicago Metropolitan Agency for Planning—Freight and Transportation Committees

Based on available documentation on CMAP's website, the Freight Committee mainly produces data, strategies, and recommendations, which are likely used by CMAP's Transportation Committee. The freight committee has produced some useful reports that relate well to the NCFRP 24 theme.

The first report of interest is the *Regional Freight Planning Recommendations Study Policy Options* document. This table of policy recommendations varies in scope but does advocate various measures for encroachment prevention and freight network preservation, such as:

- Identify, assess, and implement freight corridors & facilities of regional significance, including clustering of warehousing, distribution, and other freight-related centers, based on freight O-D patterns
- Identify, assess, and implement opportunities for corridor preservation
- Identify and promote good practices to facilitate freight movements and mitigate impacts in a variety of land use and development environments
- Establish CREATE counterpart for trucking industry which could include policy options such as:

 - Identify potential locations and funding sources for expanded truck parking/rest areas with appropriate amenities to enable compatibility with surrounding land uses
 - Expand and enhance the truck route system in the metro area, integrating other aspects of CREATE for Trucks to optimize the system
 - Develop a broadly-available freight planning geodatabase for use by public and private stakeholders to identify regional freight system needs and to coordinate action through information sharing and mutual cooperation. The planning geodatabase would include such items as local and state truck routes, clearance issues, weight restrictions, traffic generators, congestion, parking, and rest areas
- Establish governance structure, such as a Port Authority, to identify issues, guide investments, and advocate on behalf of the region through public outreach and education, promoting the Chicago economy and protecting the public interest
- Identify and implement design features to control freight-related noise
- Support City of Chicago industrial corridor designations of Planned Manufacturing Districts.

The table additionally displays which agencies would be responsible for each recommendation's implementation and gives a priority rating from "Low" to "High." Most of the recommendations listed above were given a "High" priority (Cambridge Systematics 2009b).

Another report of interest produced by/for the committee is the *Regional Freight System Planning Recommendations Study*, which was a survey of public and private entities to obtain opinions of stakeholders on the freight arena in Chicago. Relevant topics introduced include barriers to expand rail routes within the city, passenger rail services competing with freight rail services for access, limited O'Hare Airport availability for cargo facility development due to community opposition, and regulations limiting development alongside waterways. The report also does a good job of comparing public responses to questions versus private sector responses. Lastly, the report clearly shows the disparity between land use planning and freight transportation planning, as only half of the communities surveyed stated they consider freight when developing land use policy (Cambridge Systematics 2009a).

Yet another report, *Action Strategy Paper: Goods Movement*, identifies how freight can be better integrated into the planning process and public awareness. It is primarily meant to be a guide for how MPOs can accomplish this advancement, focusing on education, land use, and comprehensive freight planning as the role for an MPO and provides the vital steps required to ensure freight is properly considered going forward (Smichenko 2008). In fact, the report frankly states the following in respect to MPOs:

> To date, education and guidance appear to be the only tools available for MPOs to affect land use decisions. However, understanding how freight operations and communities can co-exist by planning in a comprehensive way will assist in mitigating future conflicts (Smichenko 2008, 22).

There are additional topics and recommendations covered within the report, but describing the report in its entirety would be far too much information to place here. Due to its high relevancy

to the NCFRP 24 project's purpose, it is suggested that this report be placed upon the developed website as a reference for MPOs follow.

The Freight Committee has also produced a variety of maps that other MPOs may want to consider producing as well. The following are examples of maps that could help interested parties see the importance of freight infrastructure within the region (Chicago Metropolitan Agency for Planning 2011):

- Chicago Midway and Surroundings
- Access to Transcontinental Rail Lines
- Major Truck-Rail Safety Conflicts
- Truck Parking Facilities
- Intermodal Facility-Land Use Maps

The CMAP Freight Committee produces a lot of useful information for the MPO, but it's unclear how prominent its findings are. There is no general freight plan or cohesive report. Rather, it's a multitude of reports and analyses that likely is consumed by the Transportation Committee during the development of transportation plans, such as the *2030 Regional Transportation Plan* (RTP). Such works do cover freight-related information, including some land use highlighting, but not to the extent that a dedicated freight plan might give. The Freight Committee reports presented here are somewhat similar to accessory reports that were used for the Atlanta freight plan (discussed in Appendix F) and, thus, could be the basis for a similar plan for the Chicago area. This can also be more beneficial than a general RTP, because RTPs cover all transportation topics, so freight issues are often downplayed and relevant topics can be presented in too broad of a perspective. This is somewhat the case in the 2030 RTP. This is not to say that such efforts shouldn't contain freight directives, but the production of a freight-only report in step with something like an RTP might be more beneficial.

Lastly, the Transportation Committee has produced a couple of maps that could prove to be useful for local governments. The Strategic Regional Freight System map documents important freight corridors and land uses, while the Sensitive Natural Resources map relates 2030 RTP projects with the level of sensitivity of the area's environment (Chicago Metropolitan Agency for Planning 2011).

Chicago Department of Transportation Chicago Downtown Freight Study

In 2008, the Chicago DOT gave a presentation on the findings of a study that evaluated the freight operations of downtown Chicago. The study presentation focuses on trucks and the access issues they face when transporting within downtown. Two of the major and relevant issues presented are passenger vehicle encroachment on loading areas and parking/loading area obstruction by dumpsters and passenger vehicles. Various mitigation tactics are discussed, including increased enforcement of parking violations, building design codes that restrict dumpster locations or require a dumpster-designated area, incorporating parking/dock locations into GIS databases, and improving/increasing signage designating areas for commercial use only (Edwards and Kelcey et al. 2008).

Although only focusing on the downtown area of Chicago, the report presentation puts forth some interesting issues that only a densely populated urban core would experience. Parking is a valuable commodity in such areas, and passenger vehicles often compete with freight drivers

who already have a difficult task of navigating the density. Such conflicts, and other obstacles that can interfere with downtown freight transport, are important aspects to consider and are often absent from other documentation reviewed, which are primarily regional in scope.

Seattle/FAST Corridor

Similar to Chicago's CREATE initiative, the Freight Action STrategy for the Everett-Seattle-Tacoma Corridor (FAST Corridor) project is a coalition of public and private entities whose purpose is to improve the freight network of the Puget Sound area. It consists of the Washington State DOT, Puget Sound Regional Council (which currently oversees the project), cities and counties within the region, ports, Class I railroads BNSF and Union Pacific, trucking interests, and other local/state/federal agencies. Unlike Chicago's effort, the FAST Corridor focuses on both rail and roadway improvements separately and jointly, especially those tied to port land access and at-grade rail and road separation. Like CREATE, the FAST Corridor project does not involve policy adjustment or influence, but it does work to "sustain the maritime international trade corridor" though the area (FAST Corridor 2006).

The project was spawned from the Regional Freight Mobility Roundtable, which itself is an informal public-private partnership of government, freight companies, and major industrial shippers within the Puget Sound region. The roundtable meets bi-monthly to listen to and discuss freight issues and topics for the region and is often consulted by the FAST Corridor group for insight (Puget Sound Regional Council 2011).

As noted above, the FAST Corridor is strikingly similar to Chicago's CREATE effort. Like CREATE, it does not attempt to influence policy matters other than pushing for system improvements to be funded and approved. It is primarily concerned with upgrading the Puget Sound area's highway and railroad systems that provide access to and from area ports, along with external trade connections to those ports. This is done primarily through at-grade separation, street expansion, and new highway construction. It serves as a means to bring public and private entities together to create understanding of the area's needs and what projects could be developed to meet those needs (Puget Sound Regional Council 2011).

Because the focus of the project is so specific, its influence on preventing future conflicts with the Puget Sound region's freight network is limited. The effort mainly serves to improve access to ports and other freight facilities, increase efficiency of the system, and reduce congestion within the area. The latter goal, and the public-private nature of the project's operation, is the noteworthy aspect for the NCFRP 24 effort. The specific focus on freight operations and desire to improve existing freight corridors acts as a means of preserving freight infrastructure, if only for the immediate future. However, as noted previously, there is no ability to ensure that future conflicts in terms of land use and incompatible coexistence will not arise, as this is outside the scope of the group. Such responsibility would rest with assigned planning agencies to advance and local governments to execute.

Regional Freight Mobility Roundtable

The Regional Freight Mobility Roundtable is an interesting coalition compared to some of the other public-private coops presented. It is relatively informal, with no overarching agenda other than to bring the public and private sectors together and to keep all freight stakeholders informed as to ongoing activities within the area. It also services as a reference point for parties interested

in freight projects and concerns, as the roundtable incorporates the many players within the freight arena into a single point of contact.

As mentioned earlier, the group meets bi-monthly and often hears presentations and discusses efforts currently underway within the region. Their section of the website contains their agendas and meeting minutes, along with the presentations given at each meeting. This can be a useful search point to see what the region's pressing transportation and freight issues are at the present (Puget Sound Regional Council 2011).

Although informal, having an established coalition of major public and private sector players appears to effectively complement project-orientated partnerships like the FAST Corridor and CREATE. Project-specific coalitions prove effective in achieving particular goals, but a permanent roundtable may prove to be more effective in the long-run to ensure that stakeholders are on the same page in terms of all transportation and freight issues. Additionally, they provide a single point of contact that can be accessed for input and influence when it comes to regional freight concerns. Being independent of specific projects underway helps ensure the longevity of the relationships between the involved parties.

APPENDIX H

REVIEW OF INTERNATIONAL INITIATIVES

This appendix identifies some of the efforts that international governments and policy researchers have devised pertaining to the prevention of encroachment on freight infrastructure and the preservation of freight networks. Examining the efforts of international entities, despite their varying legal atmospheres and differences from the United States, can provide additional ideas from which it is possible to adopt or use to create new approaches domestically. This appendix focuses on countries that have freight systems analogous to that of the United States. This approach assists in uncovering efforts that are both thought-provoking and potentially implementable within both a legal and physical context.

This survey should not be taken as an all-encompassing list of initiatives and approaches of an international location. Significant differences in how foreign entities structure and name their agencies compared to the United States can lead to difficulties in obtaining a list of all approaches and efforts. The goal is to identify to some degree the approaches others have taken and any initiatives that might be useful in the United States.

The following locations were selected and their initiatives researched:

- Canada
- United Kingdom
- European Union
- Australia – Queensland/Brisbane

The programs that have been developed in Canada were, in general, determined to have the most applicability to use planning efforts both due to similarities with the United States and the relatively advanced stage of development of the identified initiatives. The exceptions to this rule are in the area of port planning, where the efforts of EU member states, in particular that of the Netherlands, were found to be highly useful in developing a system of long term freight compatibility.

Canada

Canada has the freight system most similar to that of the United States, and its proximity suggests that Canada and the entities within were aware of issues, challenges, and efforts in the United States when considering action. Canada's similar democratic governance atmosphere means that efforts and approaches may be easily adaptable to U.S. situations.

Some Canadian experience in freight planning is already familiar to U.S. planners, as it is the result of joint planning efforts that are tied to NAFTA traffic. The institutionalization of NAFTA procedures has led to a certain degree of homogenization in the way trade corridors are assessed and described. The increased integration of Canadian and U.S. railroads has also aided this process, particularly after the acquisition of the Illinois Central by CN in the late 1990s. Nevertheless, beyond joint planning efforts that are driven by cross border trade, there have been a number of purely domestic initiatives developed within Canada for managing freight compatibility.

The Canadian effort that resulted in the Proximity Issues website was researched for this project as it had served as a model for the NCFRP 24 RFP. The effort is primarily a website that serves as a freight rail resource for cities, provinces, developers, and citizens in many capacities (FCM and RAC 2011). For cities and providences it serves as a resource for ideas surrounding the protection of freight rail that can be implemented by laws. For developers it can serve as a best-practices resource when developing near-rail infrastructure, while for citizens it provides information about rail operations in an attempt to increase their knowledge on the subject and ideally reduce complaints about rail-produced disturbances. Additionally, the effort has an active outreach campaign that presents materials to city governments, educational institutes, and conferences. It also has three active subcommittees, which are discussed below.

The effort is a joint initiative of the Federation of Canadian Municipalities (FCM), the Railway Association of Canada (RAC) and the railroad industry, with additional support from the Canadian Association of Municipal Administrators (CAMA). Its creation was influenced by a court ruling in 2000 that found that the Canadian Transportation Agency (CTA) did not have the authority to handle disputes on noise and vibration. The project receives no funding from the government, meaning it is completely funded by the participating members. The website is primarily geared towards informing the public in order to preempt conflicts and increase public awareness of freight compatibility issues. However, the website does have useful material related to the NCFRP 24 project including guidelines, legislation, and reports.

Originally based on the practices and research of Queensland and the City of Brisbane in Australia, the *Proximity Guidelines and Best Practices* guide serves as perhaps the most useful and relevant product, as it offers specific recommendations that promote freight rail preservation and encroachment prevention (Earth Tech Canada, Inc. 2007). It outlines the main issues faced when development is located near rail infrastructure and provides recommendations for land use, setbacks, and noise/vibration zones. It also provides briefs on all of the stakeholders that might be involved (levels of government, railroads, developers, property owners, etc.) and recommendations for steps that they each can take, along with recommendations for notification requirements when it comes to new development. The effort is aimed at creating a similar approach for targeting infill and existing development and how to best mitigate or eliminate issues that arise from incompatible land use near freight facilities.

As mentioned earlier, the effort consists of three subcommittees with different areas of focus:

- *Communication*: operates outreach, education, and awareness for railroads, governments, and the general public; manages website; produces annual reports and occasional surveys
- *Dispute Resolution*: provides mediation on conflicts
- *Guidelines*: researched existing efforts/laws to create current set of guidelines; considering the creation of guidelines for existing development and infill

Currently, Ontario is the only province that has implemented various elements of the recommendations produced by the effort. British Columbia has also been identified as having used the guidelines in a limited manner. Additionally, the effort has been successful in bringing about more awareness of the railroads, while also improving relations between the railroads and local and providence governments. It has also been credited with shifting complaints from noise and vibration to at-grade crossings.

As is the case in the United States, alternative dispute resolution has become a popular strategy in Canada. The CTA is the entity that often helps with resolving issues arising from property

disputes and/or noise and vibration issues if the rail line in question operates in more than one province. If the line operates within a single province, the provincial government has sole jurisdiction. In addition to rail, the CTA has responsibility over conflicts arising from airports and ports (Canadian Transport Agency 2011).

The Canada Transportation Act includes provisions for reconciling conflicts arising from rail activities (Canada Transportation Act 2007). The current incarnation of the law, which entered into force in 2007, "authorizes the Canadian Transportation Agency, a quasi-judicial administrative tribunal of the federal government, to resolve complaints regarding noise and vibration caused by the construction and operation of railways under its jurisdiction as well as public passenger service providers" (Canadian Transport Agency 2011). The agency directs parties to exhaust all collaborative efforts in resolving the dispute within sixty days of the railway receiving a formal complaint.

History of Authorization

In 1996, the original Canada Transportation Act came into force, and the Canadian Transportation Agency—equivalent to the Surface Transportation Board in the United States—began to handle disputes regarding noise and vibration under the combined §95 and 37 of the Act. In 1999, Canadian National Railroad (CN) filed suit—after the Agency had issued orders against the railroad(s) regarding noise complaints from three different parties—arguing that the CTA did not have jurisdiction to deal with complaints concerning noise, smoke, and vibrations resulting from duly authorized railway operations. CN argued that prior to 1996 CTA had not had jurisdictional authority and had not exercised any such authority and that complainants could not recover compensation or other remedies under the relevant Railway Act. On appeal, the Federal Court of Appeal held that CTA did not have jurisdiction over such issues, arguing that the Act did not contain any provision conferring upon the Agency the power, duty, or function of administering the whole Act. The court held that "… Section 95 did not vest the agency with a jurisdiction over noise complaints, when under the new Act the Agency no longer exercises control over the day-to-day operations of railway companies…. All these factors point to a diminished, rather than to an increased role for the Agency." As such, it was deemed that no specific provisions in the CTA or other legislation existed which set out how the Agency or any other government organization was to regulate issues concerning railway operations other than those pertaining to rail service and safety (Canadian Transport Agency 2011).

As a consequence of this decision, the FCM, RAC, and the railroads decided that it was necessary to work together more efficiently to understand one another and to develop a consistent dispute resolution model that applied across the board. In 2003, a memorandum of understanding (MOU) was signed which outlined the goals, objectives, and terms under which the initiative would move forward and laid out basic parameters that would be accomplished by the groups. The Canadian Association of Municipal Administrators also provides ongoing professional advice in an advisory capacity. Cost-sharing was allocated out and was the responsibility of each individual party. The MOU was renewed in 2007. The MOUs and the Appendices are the framework documents that outline goals and objectives of the initiative/association.

Port Planning Efforts in Canada

Port planning in Canada also holds a great deal in common with the United States. The integration of the Port of Vancouver, which is Canada's largest port, has largely mirrored the experiences of its American sister ports of Seattle and Tacoma in the Pacific Northwest.

From as the early as the 1980s, the City of Vancouver attempted to strike a balance between industrial and residential development of the waterfront. In city planning documents adopted in 1984, the council encouraged the port to remove hazardous goods handling activities from the waterfront with the exception of those required by local industries. In addition, it designated preferred land uses for remaining industrial waterfront and sought to prevent commuters from adopting road corridors intended for port use (City of Vancouver 1984). The Canadian Pacific railway currently owns a significant percentage of the remaining waterfront, and this fact has clearly impacted the port city's master planning. The central waterfront plan does not permit residential use (City of Vancouver 1998).

United Kingdom

Although the United Kingdom (UK) has a different physical profile compared to the United States, it still experiences some of the same issues surrounding freight facilities. The UK does not have as extensive a freight rail network as that in the United States, so the lessened presence of this source of incompatible land use conflicts means there is generally lower concern about such issues. However, general planning structure and noise mitigation approaches still exist and are worth investigating for possible use domestically.

The UK has a very structured system for planning, with guidance coming from the national government through various planning acts (specifically the *Planning Act of 2008* and the *Town and Country Planning* regulations) and going down to the local level (The Secretary of State for Communities and Local Government et al. 2007, 6). It is required that all localities have a development plan which developers and citizens can use to locate and build. These plans are to outline where particular development is desired, and development applications must follow these plans to be approved. Thus, if local governments properly assess incompatible land use concerns when creating a development plan, conflicts with freight infrastructure should be reduced. As in the United States, final implementation lies with local governments; however, unlike the United States, development plans are required, and development must follow those plans (Department for Communities and Local Government 1994). Furthermore, planning applications must be submitted to the local planning agency for approval, and during this process, the planning agency must consult with defined interested agencies and/or organizations based on what type of development is being proposed. For example, British Waterways must be consulted when it's deemed that a development could impact an inland waterway. There is also a required consultation for development around airports, but no requirements are in place for development around ports or rail infrastructure (Department for Communities and Local Government 2009).

The national government also produces Planning Policy Statements (PPSs) and Planning Policy Guidance notes (PPGs) which "explain statutory provisions and provide guidance to local authorities and others on planning policy and the operation of the planning system" and "explain the relationship between planning policies and other policies which have an important bearing on issues of development and land use." The content of these policy papers must be taken into account by local governments when producing development plans. PPGs are currently being

replaced by the PPSs, but PPGs were still researched since some are still active (Department for Communities and Local Government 2011).

The *Planning Policy Guidance 24: Planning and Noise* (Department for Communities and Local Government 1994) is one of the more relevant PPGs to this project despite its age (produced in 1994). Its purpose is to guide development plan producers in properly accounting and planning for noise concerns. It recommends that plans document noise-producing and noise-sensitive areas for developers to reference and suggests that plans note where those uses should go. The paper notes that the Secretary of State regards noise-sensitive uses to be housing, hospitals, and schools, but plans can expand that list if desired. The paper also puts forth Noise Exposure Categories (NECs) to assist in determining the suitability of residential development in terms of noise exposure. It breaks down noise levels from different sources, describes these noise types, and provides a scale of suitability. In the event of already existing noise issues, mitigation approaches are listed (engineering, layout, and administrative), and potential methods are explored. Lastly, the paper provides some sample language for planning directives pertaining to noise.

The *Planning Policy Statement 3: Housing* (Department for Communities and Local Government 2010) could have been an effective document to place further emphasis on compatible use development, since it discusses suitable locations for housing. However, the paper's context for suitable locations typically refers to market suitability, redeveloping areas, and providing a large array of housing types. Adding compatible use statements into the paper would have been a good tie-in to the groundwork that PPG 24 provided. A similar lack of this focus is found in the *Planning Policy Statement 12: Creating Strong, Safe, and Prosperous Communities through Local Spatial Planning* (Department for Communities and Local Government 2008). Various sections within the paper are suitable for mentioning compatible land use concerns, but only the broadest references are given, such as creating an action plan for conflicting areas or developing a land use map to show where specific developments should go. Neither of those topics, or the rest of the paper, provides any specific attention towards being mindful of incompatible land use in regards to freight and industrial facilities.

The *Planning Policy Guidance 13: Transport* (Department for Communities and Local Government 2001) provides a little more direction and focus on being mindful of surrounding development. The paper provides direction for developers, asking them to work with local planning authorities even before the official application process begins in order to ensure transport has been thoroughly analyzed and accounted for. More importantly, the paper has a dedicated freight section that speaks to preserving freight routes, especially ones that serve intermodal activity. One way this can be done is through designating an unused rail corridor as a Strategic Freight Site, which allows use only if it is for freight rail. The paper also stresses the importance of retaining discarded transportation routes and infrastructure in case their use is vital at a later date, with rail receiving the bulk of focus for this initiative. Should redevelopment be desired, uses that promote sustainable transport should be prioritized to help retain as much potential as possible. This section also speaks to where freight-generating uses should be located, stressing their placement away from congested areas and residential uses and instead promoting their location near multimodal access points. Lastly, the paper organizes suggestions by mode within the "Planning for Transport" annex. It explicitly directs that incompatible land uses near airports should be avoided, as this may interfere with operations. Similar language is

used for development around inland waterways and ports, but it adds that redevelopment of former port sites should again promote sustainable transport.

The UK at one point had a public authority for rail promotion called the Strategic Rail Authority (SRA), which was dissolved in 2006 (Department for Transport 2006). The SRA produced some interesting and useful documents during its existence, including land use monitoring and control in *Land Use Planning and the SRA: Guide for Local Planning Authorities and Regional Planning Bodies* (Strategic Rail Authority 2001). The document has no binding power, but it did attempt to interject the SRA into the planning process. It put forth recommended situations for which it should be consulted and even proposed the power to have a say in the application process. It stated that the SRA would have the power to exercise land use control in order to safeguard existing and proposed infrastructure from non-rail development and other undesired uses. It also proposed the idea of producing materials to assist local planning authorities in properly accounting for rail in the planning and application processes. Safeguarding existing infrastructure and future sites is also echoed in the SRA's *Freight Strategy* and *Strategic Rail Freight Interchange Policy* reports. Clearly, the SRA was determined to further establish rail as a viable freight transport mode in the UK and understood the issues that face rail, which makes it unfortunate that its role was eliminated.

Finally, the UK's Department for Transport produced an all-encompassing transport network plan in 2004 called *The Future of Transport: A Network for 2030* (Department for Transport 2004b). The document explores transportation in essentially every manner imagined, including by mode, but does relatively little in mentioning or addressing incompatible land use and preserving freight infrastructure. It does acknowledge freight's importance for the future, and it even has a chapter dedicated to freight, which mentions the importance of freight policy being considered in conjunction with housing and spatial development. However, references to specific encroachment or compatibility issues in the mode-specific chapters are lacking. For example, when the plan discusses issues with airport capacity concerns, noise concerns are not mentioned. The Department for Transport does a better job highlighting land use issues in its guide for inland waterways, noting that areas suitable for water freight should be preserved for such uses by local plans. Local plans should also consider the implications of non-freight developments near used inland waterways in order to avoid conflicts during and after construction (Department of Transport 2004a).

European Union (EU)

Research of the EU's efforts to preserve freight infrastructure and prevent encroachment upon it yielded less useful information regarding rail planning but a greater degree of information on port planning. This outcome is not entirely unexpected, as the EU's makeup is very diverse in terms of political organization, which results in a variety of approaches and legal power over land use. Various sources did reveal the desire to create freight corridors throughout the EU, but little information was available as to how these corridors would be protected and conflicts mitigated.

The EU has become involved in noise conflicts resulting from rail transport. The EU has implemented noise level limits for freight trains, requiring quieter brakes that reduce noise pollution by up to 50 percent. The EU is looking at ways to persuade railroads to also upgrade existing equipment, as the lifetime of cars in service can be substantial. Schemes to provide

subsidies that promote up-front fitting have been proposed, as have fees for noisier cars and the exceeding of noise levels (Commission of the European Communities 2008).

Land use planning around ports was found to be an area of particularly strong experience in mainland Europe. The area around the Port of Rotterdam is an example of a master planned port city where great care has been taken to integrate industrial and tourist functions. It is impossible in the Rotterdam context to fully segregate industrial from residential use. Therefore, efforts have been made to minimize the impact of port activities such as noise and traffic on the surrounding communities. In some cases, former blue collar neighborhoods have been gradually depopulated when their proximity to port activities was deemed too problematic. Alternatively, some port-related businesses that were located near the city docks have been moved closer to the opening of the channel (Daamen and van Gils 2006).

There have been several incidences in Europe where port-owned property that was not being used on a temporary basis was claimed by the surrounding city (Daamen and van Gils 2006). In the 1990s, the Port of Rotterdam lost some former industrial parcels of land to urban redevelopments, termed the Kop Van Zuid projects. These parcels had been abandoned for a long period of time, and their redevelopment was seen as significantly boosting the city's attractiveness (Cadell, Falk, and King 2008). In the future, however, the Port hopes to prevent any current property from falling into derelict condition.

Australia – Queensland/Brisbane

Australia has many features similar to the United States, both in physical and political character. The State of Queensland and the City of Brisbane were specifically selected due to their influence in the development of the Proximity Issues website in Canada. Additionally, planning influence from the national level is minimal at best, and the State of Queensland has a well established system of planning that suits the interests of NCFRP 24. However, the federal government is currently in the process of producing a national freight strategy, though it has been criticized for being delayed (Port Strategy 2010).

Queensland's efforts regarding land use concerns surrounding freight infrastructure are the most direct and clear initiatives explored in this appendix. Their efforts are largely shaped by the Sustainable Planning Act of 2009, which replaced the previous Integrated Planning Act of 1997 (Queensland Government 2009). This legislation gives considerable influence to the state and its transport department, which will be explored below.

Queensland's Department of Transport and Main Roads is a primary source for topics related to the prevention of encroachment upon freight infrastructure and the preservation of that infrastructure, including incompatible land use and noise/vibration concerns. The department makes its interest in compatible use well known on its website. It outlines its desired outcomes for planning schemes (plans for areas), highlighting the importance of compatible use in keeping transport corridors viable for their intended uses. Special notice is made of freight corridors and the importance of avoiding incompatible uses (such as residential) or using buffers between such uses (such as commercial and industrial). It states that if no mitigation technique would be successful, then proper planning should aim to avoid incompatible uses near the transportation infrastructure (Queensland Government 2010b).

One of the department's largest efforts pertains to rail noise concerns. It has a dedicated page that outlines the state's interest in rail corridors and avoiding noise and vibration issues along those corridors. The page has three relevant approaches for dealing with rail noise: 1) listing of incompatible uses, 2) highlighting what planning schemes can do to avoid conflicts, and 3) providing a sample approach to handling rail noise in a planning scheme. The listing of incompatible uses (or "noise-sensitive" uses) is rather detailed, with the following items appearing on the list:

- dwelling units (comprising houses, duplexes, multiple dwellings, accommodation units, relatives' apartments, retirement villages, motels, aged-care accommodations, hostels, etc.)
- child care centers
- schools
- libraries
- kindergartens
- colleges, universities or other educational institutions
- hospitals surgeries, or other medical institutions

In terms of recommended planning schemes, the page suggests noise assessments for areas, linking the preferred land use near rail corridors to the type of rail service in the area, and code provisions that allow applications to be measured against noise criteria. It puts forth possible mitigation steps to allow less-compatible uses to exist, such as building design codes, noise barriers, and simple distance buffers (Queensland Government 2010f).

The department highlights the importance of land use planning with rail in its *Rail Network Strategy* paper, mostly noting that rail location should be included in land use plans in order to ensure that rail placement is taken into account (Queensland Department of Transport and Main Roads 2009). The department also conducts studies that document potential conflicts when considering an expansion or creation of a rail corridor and includes mitigation suggestions when conflicts are identified. The Southern Freight Rail Corridor Study is a good example of this process, especially within the "Land Use and Zoning" chapter, which contains a conflicts mitigation suggestion section (Queensland Department of Transport and Main Roads 2010a).

The department also provides links to information about its role in assessing development plans. In Queensland, a development proposal may or may not need approval for development. In order to make the process more efficient and easier to conduct, the department has created a portal for creating and tracking a proposal within the process (Queensland Government 2010b). If a proposed development requires approval (Queensland Government 2010b), and the proposal is deemed to potentially impact state transport interests, the application must be forwarded to the Department of Transport and Main Roads for assessment (Queensland Government 2010e). The government put together two guides that help developers determine if assessment is needed, with one guide pertaining to rail and airports (Queensland Government 2011a) and the other pertaining to state roads (Queensland Government 2011b). These guides present all of the scenarios, thresholds, and triggers that would require the initiation of an assessment. To further assist developers in seeing if assessment would be required, the department has an online map tool that shows where current and planned infrastructure and corridors are, along with relevant aviation zones, including Public Safety Zones that restrict development by runways (Queensland Department of Transport and Main Roads 2010b). (These safety zones are also used in the UK

(Queensland Government 2010f).) Similar to the information that is obtained from the map tool is the department's "property search service," which allows prospective buyers of a parcel to first determine if the state has any non-road transport interest in that parcel (Queensland Government 2010f).

The City of Brisbane, located in Queensland, also has efforts supporting land use considerations that directly or indirectly defend against incompatible use conflicts. Its *City Plan 2000* (Brisbane City Council 2000) contains ample mention of maintaining compatibility amongst land uses. The strategy portion of the plan (Chapter 2) promotes visual buffering for incompatible land uses, consistency in spatial planning, and controlling incompatible development around economic centers such as industrial zones, airports, seaports, and other industry-related developments. This chapter also promotes compatible development in order to preserve major transport corridors and ports so that they can grow as needed and not face pressure that restricts their operations due to conflicts. The plan's assessment chapter (Chapter 3) further highlights incompatible land use concerns, explicitly stating that residential development should avoid incompatible uses so that they do not impede freight operations. Recently, the ongoing review of the *City Plan 2000* explicitly stated that the city will strive to prevent non-industrial uses from intruding on industrial areas in an effort to protect their operations (Brisbane City Council 2009). The codes section (Chapter 5) does this as well, stating that a development application must show that the proposed development is compatible with neighboring uses and that it does not cause "unreasonable costs" on nearby development. If a proposed development is incompatible, it must provide adequate buffers so that it does not cause conflict. There is even specific code prohibiting water landings from negatively impacting the typical use of the waterway. Additionally, the city's transport plan provides a map of the future freight corridors for the city, making it easier for developers and residents to see where freight movement is anticipated (Brisbane City Council 2008).

The city also has positive public notification requirements for developments, which potentially gives freight entities an opportunity to learn about proposals. In the event that the development would need an impact assessment or code assessment, public notification must be given, including direct notice to adjacent land owners (Brisbane City Council 2010).

Lastly, the City Council has created an online resource that allows potential developers or buyers to research a property to obtain development details and see how a proposed development will be assessed (Brisbane City Council 2010).

Conclusion

There are numerous international examples that can aid in U.S. efforts to preserve and protect freight assets and corridors. The United States has the world's most extensive freight rail system. Nevertheless, the system in Canada is very similar in design and function and, as a consequence, has encountered many of the same issues. For example, the strategies adopted by Canada through authorities vested by the CTA to anticipate and moderate disputes could be a useful tool in guiding U.S. authorities. A particularly useful recurring feature examined through the international study is the effort to include interested parties in the development approval process and assist in making developers aware of transport infrastructure. An example of effective port/city planning was found in Vancouver, BC, which hosts the country's largest port and is one of its fastest growing cities.

In the area of port planning, the centrality of the port/city connection in Rotterdam, combined with the overall population density in the Netherlands, has led to urban planning efforts that are more extensive than current U.S. practices. Cities such as Hamburg, Antwerp, and Rotterdam have been managing port growth where the value of land is far higher than in most U.S. contexts. The similarity in terminal designs and inland transportation connections with intermodal ports allows for a significant amount of transferability to the U.S. context, despite the sharp differences in urban layouts.

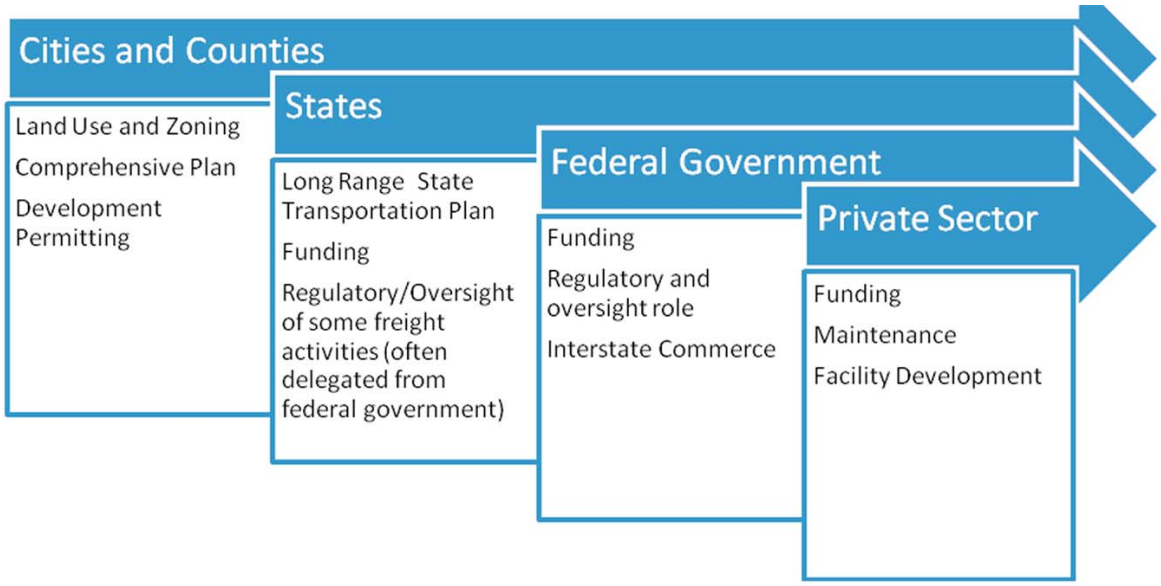
APPENDIX I

FEDERAL OVERSIGHT OF U.S. FREIGHT INFRASTRUCTURE

This appendix discusses the federal role in the oversight of the U.S. freight infrastructure. As discussed elsewhere in this report, oversight, control, planning, and preservation of the freight network is achieved through a piecemeal approach consisting of various levels of government and the private sector. Similarly, financing of freight infrastructure is accomplished through various means, including both public and private financing.

Federal agencies also have no jurisdictional role or responsibility over land use planning and zoning controls that affect freight corridors and facilities. For the purposes of preserving or protecting freight facilities, the jurisdictional authority for land use control falls within the purview of cities and counties. This is a framework that is, in general, poorly suited to preserve corridors and supply chains that cross multiple states and international borders. In addition, the federal government, states, and the private sector play roles within the hierarchy of planning and preservation activities. Figure I-1 illustrates how these various entities can interact to impact land use decisions for freight preservation and protection.

FIGURE I-1
GOVERNMENT ROLE IN FREIGHT INFRASTRUCTURE ISSUES



Source: UT-CTR

FEDERAL PREEMPTION OF INTERSTATE COMMERCE AND FREIGHT

Cities and counties must be cognizant of federal preemption of interstate commerce when making decisions regarding land use, corridor development or management, and zoning activities regarding freight facilities. Decisions that severely restrict the movement of goods—for example, through restriction of route choices or reduction in operating hours —can sometimes be struck down under federal preemption.

Federal preemption functions to foreclose state and local regulations. The supremacy clause of the United States Constitution states:

> This Constitution, and the Laws of the United States which shall be made in Pursuance thereof; ... shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding. U.S. Const. art. VI, cl. 2.

This clause is the foundation for the legal doctrine of federal preemption. The Commerce Clause of the U.S. Constitution (Art. I, § 8, Cl. 3) can also be used to strike down local land use and zoning laws. Under the Commerce Clause, Congress possesses the exclusive power to regulate interstate commerce. This may limit state power to regulate commerce even in the absence of Congressional action (481 U.S. 69, 107 1987). However, courts prefer to avoid engaging in a Commerce Clause analysis if they can find preemption under a federal statute (38 F.Supp.2d 1096, 1101, (D. Minn) 1998). Below, we summarize federal preemption as it relates to the various freight transportation modes and facilities.

Air Transportation

Federal preemption is not as absolute with respect to air transportation as with other modes. Federal preemption generally holds in land use and zoning around airports. Local regulation of aircraft and airport noise is broadly preempted, except when a municipality operates the airport. Federal regulation of land use surrounding airports is principally limited to Runway Protection Zones—established by the federal government to protect its investment in airport facilities—which cannot be modified without federal approval. Local regulations that are consistent with federal requirements or affect areas altogether outside the Runway Protection Zones are not preempted. When zoning prevents airport expansion, the law is unsettled, and local efforts to use zoning powers to prevent expansion may or may not be preempted.

Ports

Federal preemption often does not hold in land use and zoning actions concerning ports/marine facilities. The Coastal Zone Management Act of 1972 ("CZMA") creates a voluntary program for states to create Coastal Zone Management Plans outlining how states will regulate their coastal zones. Courts have recognized that the scheme established by the CZMA strongly suggests against federal preemption of local and state regulation. Accordingly, local land use regulations surrounding ports are unlikely to be preempted by federal law. The CZMA specifically grants states broad authority to regulate the coastal zone. Further, if local land use regulations happen to impact navigation, the local regulation will stand as long as it does not directly conflict with federal regulation.

Rail Transportation

Federal preemption of land use and zoning regulations affecting freight rail transportation is far-reaching. Most local regulations placed on railroad right of ways, operating procedures, crossings, and facilities are preempted by federal law. Most attempts at zoning or land use regulation will be preempted when such regulations tend to make the operations of railroad

carriers more difficult. Federal preemption of regulations on railroads is found in the Interstate Commerce Commission Termination Act of 1996 (ICCTA). The broad definition of "transportation" in the ICCTA ensures that many railroad operations are protected from state and local regulation by federal preemption. Courts, however, have been forced to limit the reach of federal preemption by finding that some facilities do not fall into the category of "transportation" by rail carriers, and that the incidental involvement of a railroad (such as being a landlord) is not sufficient for federal preemption of state and local actions. Furthermore, while most land use and zoning regulations placed on rail carriers will be preempted by ICCTA, a few state courts have recognized a limited class of regulations that are not preempted. Reasoning that compliance with certain regulations would not substantially disrupt the operations of rail carriers, these courts have upheld some local and state regulations that impose minimal requirements on railroads. However, relatively few cases have allowed for this type of local regulation, and the area is far from settled.

Trucking

Federal preemption has been invoked regarding trucking interests and for services that facilitate trucking such as truck stops. Following the Motor Carrier Act of 1980, Congress clarified that states could not ban trucks that met approved weight and length standards from traveling on federally funded primary routes, with some limited exceptions. In 1990, Congress established uniform rules for the transportation of hazardous materials that include uniform standards for labeling of hazardous materials. Recently, the ports of Los Angeles and Long Beach and Houston have begun to address the polluting effects of the trucks that access these facilities through programs addressing the drayage industry. Issues regarding preemption continue to arise around regulation of trucking activity. In 2008, the American Trucking Associations, Inc. challenged the implementation of concession requirements that were associated with the Port of Los Angeles and Long Beach Clean Truck Program arguing that they were preempted by the Federal Aviation Administration Authorization Act 49 U.S.C. §14501(c) because they improperly attempted to regulate the price, route, or service of any motor carrier. The Court found that some regulations imposed by the defendant port on motor carriers were not preempted by the existing motor vehicle safety acts, as they did not fall within the motor vehicle safety exception.

FEDERAL OVERSIGHT BY MODE

Currently, there is no single federal agency that has primary responsibility for the entire U.S. freight network. Federal oversight tends to be organized by mode of transportation. Federal agencies that may exert decision-making authority over issues that can indirectly or directly impact freight preservation and planning include:

- Department of Transportation
- Department of Defense
- Department of Homeland Security
- Department of the Interior
- Housing and Urban Development
- Environmental Protection Agency
- Federal Aviation Administration

- Federal Communications Commission
- Federal Emergency Management Agency
- United States Coast Guard
- United States Army Corps of Engineers
- United States Fish and Wildlife Service

The main segments of the Federal Code of Regulations that control freight facilities and freight operations are:

- Title 14 Aeronautics and Space
- Title 15 Commerce and Foreign Trade
- Title 23 Code of Federal Regulations Highways
- Title 24 Housing and Urban Development
- Title 33 Navigation and Navigable Waters
- Title 46 Shipping
- Title 49 Transportation

This section provides a brief overview of the major federal agencies that control freight planning, preservation, protection, and development activities by mode

Air Cargo

The Federal Aviation Administration (FAA) is the primary federal agency responsible for aviation administration in the United States. It disburses federal funds under various programs, is responsible for safety certification of airports, airlines, and pilots; enforces airport compliance programs; creates and oversees airport safety programs; and oversees air traffic controls. The FAA also has a strong role regarding airport-land use issues, including compliance reviews for airport noise and land use reviews.

There is a large body of federal legislation that controls airport activities, including development, expansion, and specific restrictions regarding air space and landing zones. Most local jurisdictions have also developed zoning and other ordinances to reduce conflicts around airports by restricting incompatible type land uses and/or providing notice-type provisions to prospective property purchasers. There has also been a dedicated airport noise compatibility planning program under 14 CFR Part 150 (colloquially known as the “F150” program) that the FAA administers to reduce noise impacts on surrounding communities. This program has provided funding for the purchase of properties that sit within designated noise contours and has also provided funds to retrofit properties affected by noise with sound-proofing and noise-reducing insulation.

There is a large body of research that can be found regarding airports, land use planning, and noise programs, and simple internet searches can easily uncover this information. A 2010 TRB Report *Enhancing Airport Land Use Compatibility* is an excellent resource for the local planner, developer, or freight entity that may be considering development either within or adjacent to airports.

Deepwater Ports and Marine Highways

The Maritime Administration (MARAD) is the agency within the U.S. Department of Transportation that deals with waterborne transportation. Its programs promote the use of waterborne transportation and the viability of U.S. merchant marine operations. MARAD works in many areas involving ships and shipping, shipbuilding, port operations, vessel operations, national security, environment, and safety. MARAD is also charged with maintaining the health of the merchant marine, since commercial mariners, vessels, and intermodal facilities are vital for supporting national security. The agency provides support and information for current mariners, extensive support for educating future mariners, and programs to educate the public about the vital role the maritime industry plays in the lives of Americans. MARAD also provides expertise to ports on financing and infrastructure and often assists ports with redevelopment plans.

The Federal Maritime Commission regulates international maritime commerce. Its actions can sometimes have relevance to landside goods movement as well.

The U. S. Army Corps of Engineers (USACE) is responsible for developing and maintaining the nations' water and related environmental resources. The USACE is the lead federal flood agency and also carries out natural and cultural resource management programs. The USACE played an integral role in the development of the country by developing major waterways in the United States such as the Mississippi and Ohio Rivers. In addition, the USACE is the agency in charge of maintaining federal channels and waterways throughout the United States.

Rail

The Federal Railroad Administration (FRA) and the Surface Transportation Board (STB) are the two main federal agencies regulating freight railroads within the United States.

The FRA was created by the Department of Transportation Act of 1955 (49 U.S.C. 103, Section 3(e)(1)). Its purpose is to promulgate and enforce rail safety regulations, administer railroad assistance programs, conduct research and development in support of improved railroad safety and national rail transportation policy, and consolidate government support of rail transportation activities. The FRA Office of Safety manages a substantial regulatory agenda and five main safety disciplines: hazardous materials, motive power and equipment, signal and train control, track and structures, and general operating procedures. The agency also sets out safety performance measures and goals, conducts a rigorous public outreach program, and has program managers for the highway-rail grade crossing and trespass prevention program. This office also trains and certifies state safety inspectors.

The STB is the successor agency to the Interstate Commerce Commission. The STB serves as an adjudicatory and regulatory body. It is charged by Congress to resolve railroad rate and service disputes and review railroad restructuring transactions (mergers, line sales, line construction and abandonments, and environmental impact assessments). In addition, the agency has jurisdiction over certain trucking company, moving van, and non-contiguous ocean shipping company rate matters; and rates and services of certain pipelines not regulated by the Federal Energy Regulatory Commission.

Trucking

The main agency that promulgates rules and has oversight over trucks is the Federal Motor Carrier Safety Administration (FMCSA). This is complimented by the STB's role in the regulation of certain trucking company rate matters and the Federal Highway Administration's (FHWA) role as developer and steward of the interstate highway system.

The FMCSA was established as a separate component within the Department of Transportation in 2000 after the passage of the Motor Carrier Safety Improvement Act of 1999 (49 U.S.C. 113). Its primary mission is to prevent commercial motor vehicle-related fatalities and injuries. Activities of the Administration contribute to ensuring safety in motor carrier operations through strong enforcement of safety regulations; targeting high-risk carriers and commercial motor vehicle drivers; improving safety information systems and commercial motor vehicle technologies; strengthening commercial motor vehicle equipment and operating standards; and increasing safety awareness. FMCSA also authorizes hazardous material truck routes and in 1994 established rules for how states and local jurisdictions go about designating certain thoroughfares in their areas as authorized routes to transport hazardous materials by truck. The standards for the delineation of routes can be found at 49 CFR Section 397.71(b). Twelve specific factors must be considered when establishing a hazardous material transportation route. These are: population density, type of highway, types and qualities of non-radioactive hazardous material, emergency response capabilities, results of consultation with affected persons, exposure and other risk factors, terrain, continuity of routes, alternative routes, effects on commerce, climatic conditions, and congestion and accident history.

FMCSA regulation and oversight includes transportation workplace drug and alcohol testing programs, compliance with interstate motor carrier noise emission standards, commercial motor carrier safety assistance, compatibility of state laws and regulations affecting interstate motor carrier operations, motor carrier routing regulations, fees for registration and insurance, state registration standards, federal motor carrier safety regulations, driver qualifications, hazardous material transportation including parking and driving rules, and hours of service rules for commercial truck drivers. The Administration works with federal, state, and local enforcement agencies, the motor carrier industry, labor safety interest groups, and others.

The FHWA was created in October 1966 after having several predecessor organizations. FHWA is an agency within the U.S. Department of Transportation, and it supports state and local governments in the design, construction, and maintenance of the nation's highway system. FHWA also provides federal financial assistance to state and local governments for constructing, preserving, and improving highways. The Agency has a Freight Management and Operations Division that was established in 1999 as part of the Office of Operations. Freight Management and Operations conducts research, develops analytical tools and data, provides guidance, reviews state applications for funding and projects of national and regional significance as well as the National Corridor Infrastructure Program, conducts testing of technologies, and promotes the development of freight standards for information exchange.

APPENDIX J

FREIGHT AND PUBLIC SECTOR SURVEYS

The NCFRP 24 project team developed a questionnaire for interviews with identified freight entities across all modes. Interviews were also conducted with staffers at the Association of American Railroads, American Association of Ports, the U.S. Maritime Administration, Airports Council International, as well as staffers from the Class I railroads, port directors, other freight groups, trade associations, and corridor groups, such as OnTrack America and the North American Super Corridor Organization (NASCO).

Based upon these discussions and literature review two online surveys were created; one for the freight industry and one for local jurisdictions. The goals of the surveys were to gain critical information on conflicts and barriers and to provide a high-level view of whether local jurisdictions were planning for freight and had capacity to do so (the survey questionnaires can be found in the NCFRP 24 Interim Report).

The surveys were designed as a means of gathering preliminary information and, thus, were not administered to develop any type of statistical analysis or inference. The cities and counties were chosen based upon proximity to a freight corridor, volume of trade, their propensity to be dealing with freight impacts across the modes, and whether they were included in one of the 11 identified Megaregions in the United States.

Freight Survey

The freight survey generated 30 highly detailed responses. Fourteen respondents specifically indicated they represented railroads, 9 indicated they represent maritime/ocean operations, and 7 indicated they represented inland waterways. Other modes represented by the respondents included trucking, air, inland port or intermodal facility, and port authority (respondents could represent more than one mode).

In general, the respondents to the freight survey thought local levels of government had the most significant involvement in incompatible land use issues. Examples of successes in resolving encroachment or incompatible land use issues included the Alameda Corridor, the Reno Trench, and projects in Stockton and Lodi, California.

The surveys also revealed that building working relationships between the freight industry, local jurisdictions, and other groups involved in real estate requires many entities to work together. This process takes time, patience, and dedicated staffers. As an example, a small railroad noted:

> *Our rail corridor passes through 40 municipalities and 16 counties. We are building working relationships with each planning and inspections departments to be able to prevent new or expansion of structures and incompatible land uses within the corridor. We also give presentations to surveyor professional association gatherings to educate surveyors of problems with providing erroneous information regarding corridor width and location. We also advise real estate brokers by letter of homes for sale that are adjacent to the rail corridor so buyers are properly advised of corridor characteristics and issues. We are actively working with municipalities as they re-write their ordinances in the normal course of updating to include restrictions that help protect the corridor. As*

each municipality is very independent, we find keeping in touch once each month gets us early access to plans so we can provide written comments on plans before they go before municipal staff review and planning board approval.

The survey results were both enlightening and informative from the freight perspective. Gaining information on how land use affected freight activities and highlighting the types of activities was extremely useful for developing the conflicts and barriers matrices. For example, a port operator noted that they would define encroachment as:

Adjacent uses that may stymie public processes related to SEPA/NEPA and permitting; or may create political pressures to expect ex post facto mitigation, hinder development, or alter corridor usage/intensity.

Other conflicts that the surveys revealed ran the gamut from encroachment of agricultural uses onto railroad right of way, navigation restrictions, pollution, trespass, obstacle clearance for air-freight, and operational activity conflicts that affect freight scheduling. For example, in the case of air-cargo, a survey respondent noted:

…an additional, more frequent use of encroachment at and around airports deals with the penetration of critical airport obstacle clearance surfaces by tall buildings, cranes, and other structures. Such penetrations, which can be difficult for airports to control, can adversely impact the utility of airport runways by increasing approach and departure minimums, reducing the amount of payload aircraft departures can carry, or limiting the destinations that can be served.

A respondent for a marine facility noted that even though they are in an area zoned for manufacturing, a residential high rise residential development is occurring next to a 24/7 water-dependent maritime facility that is the largest home to tugs and barges in this city:

…We (and the proposed residential high rise) are in a manufacturing zone. Zoning should protect us but we find that developers with enough money can find ways to get the zoning changed.

Another respondent noted that there were sometimes conflicting elements of legislation from different authorities. For example, port special purpose district enabling legislation was in conflict with shoreline management enabling legislation.

Encroachment has also taken shape and form in ways that may not be immediately obvious if one strictly looks at the large urban and metropolitan areas. As an example, a railroad stated that agricultural landowners often encroach onto railroad right of way, particularly by extending crops into and onto the right of way.

In many instances, actual encroachments onto freight right of way occur because:

…Homeowners are either unaware of the location of railroad right of way or disregard the boundary line and extend their gardens, sheds, garages, outdoor living space into railroad right of way.

Finally, the respondents offered a variety of steps that might be taken to reduce the likelihood of encroachment and incompatible land uses. They include MPOs inclusion of freight infrastructure in master planning, stricter enforcement of existing zoning laws, broader use of Smart Growth principles, state guidance on development near existing rail lines, and proactive engagement with communities and city planners on freight corridor needs and benefits.

One survey respondent noted what possible steps could be taken to reduce the likelihood of encroachment or incompatible land uses:

> *It requires a concerted effort to monitor the corridor, work with municipal, county and state agencies and surveyors, land title attorney groups, real estate professionals, and others to educate, educate, and educate. However, unless projects that are delayed or made very expensive because of the problem can be pointed to, it is not viewed as a problem. Sometimes the newspapers vilifying the railroad for putting people out of work or businesses is the best message that the encroachment issue is a problem for all of society.*

Many of the freight respondents noted that zoning restrictions are subject to change and that developers have had some success in making changes to zoning regulations (sometimes through a variance to the zoning ordinance) that have increased encroachment issues.

Barriers to the efficient operation of freight activities, in many ways, were the corollary and mirror of the conflicts. These included:

- Speed restrictions
- Height impacts (trucking, rail, and airports)
- Size and weight impacts (trucking and air cargo) either due to route restrictions or because of facility design
- Highway and road design impacting turning radii which impact route choice and costs and the ability to access freight and manufacturing facilities
- Permitting and review processes
- Difficulty and costs of conducting dredging operations and disposing of dredged material to keep the Great Lakes, Mississippi and marine ports, and marine corridors at critical depths for vessel accessibility

As an example, one port manager in charge of railroad activities noted that:

> *Many cities issue construction/building permits for projects that do not address encroachments properly. Example, a housing development is approved adjacent to railroad tracks. Then later, the home owners do not like the rail operations and complain to the specific railroad. The complaints to the Railroads may affect the existing train operations. Example, trains may have been stored at a specific site, but the home owner's complaints may result in trains not being able to be stored. Thus the train will be stored somewhere else.*

Public Sector Survey

A total of 38 responses were received (17 had every question answered). Fourteen of these responses came from MPOs, 14 came from cities, and the rest came from counties (which some could deduce highlights the lack of knowledge of planning staff in counties regarding freight). These respondents were geographically dispersed, with responses coming from Alabama, Colorado, Illinois, Indiana, Kansas, Michigan, Minnesota, Montana, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Texas, and Washington. Of the 17 complete responses, 14 had adopted a transportation plan, but only 5 have an adopted freight plan. The survey also revealed that:

- 12 have a transportation department or committee
- 12 incorporate freight-related concerns in the planning process
- 9 have an adopted comprehensive plan
- 8 have adopted a transportation corridor map
- 7 have a freight department or committee
- 10 have zoning authority, and all 10 use that authority

The intermingling of industrial and non-industrial uses was highlighted by 2 large city respondents. One noted:

> *…In urban areas, there is always a boundary between industrial and non-industrial uses, so freight and non-freight uses will always intermingle. Recent freight developments have sometimes been required to build a substantial berm around the freight facility to reduce the impact of the freight facility on adjacent communities. In addition, highly restrictive truck route systems have been established to funnel freight traffic onto a limited number of roads, away from residential and commercial areas. The City has had to establish protected industrial corridors to prevent non-industrial development in industrial areas. This is meant to keep industrial jobs in the City.*

The survey listed a number of tools that can be used to prevent encroachment and incompatible land use or preserve freight infrastructure, and it asked the agencies whether they used any of these tools. The survey found that the most popular methods included buffer land use requirements, overlay districts, building setbacks, and zoning/land use controls around freight and industrial districts.

The buffer land use requirements employed varied considerably. Some agencies responded that they use gradations in zoning to have greater separation between intense industrial activity from residential uses, than lighter industrial activity and residences. One response indicated that the buffer was the result of the planned development process and not imposed as a requirement that could be administered for developments completed by right. Another agency responded that the buffer came through landscaping requirements.

The survey asked a set of questions concerning the consideration of freight in planning. While 12 of the respondents indicated that freight-related concerns were given consideration in the planning process, 6 indicated that they were given consideration in zoning/rezoning and the permitting process. In terms of the transportation planning process, 12 responded that freight currently is given consideration in the transportation planning process. There is less

consideration of freight in the land use policies process, as only 6 respondents stated that freight is currently given consideration in land use policies. As an example, one MPO noted that:

> *… while there is a freight planning chapter within the LRTP -it is policy oriented and does not contain specific freight projects.*

Eleven of the respondents indicated that they are currently involved with neighboring or other jurisdictions in the transportation planning process, while 9 said they were currently involved with coordinating freight transportation with local businesses and industries. When asked whether the agency was actively involved in freight corridor preservation, only 3 responded affirmatively. All 3 agencies responding affirmatively attempt to preserve maritime, multimodal, railroad, and highway infrastructure. Two of the agencies attempt to preserve airports and inland waterways, while 1 responded that it attempted to preserve warehouses and distribution centers. A variety of methods have been used to preserve the corridors, with no one method predominating.

In summary, government agencies have used a variety of tools to address future encroachment issues, including buffer land use requirements, building setbacks, overlay districts, and zoning/land use controls around freight/industrial facilities. It was also evident from survey responses that while most agencies had transportation plans few have specific detailed freight plans. Finally, the complexity in dealing with pre-existing intermingling freight and non-freight uses should be noted. One public sector respondent opined:

> *There is substantial intermingling of freight- and non-freight related uses. At this time, separating such uses would lead to substantial economic disruption. An alternative approach is to reduce the impact of freight activities on local communities. E.g., reduce noise and air pollution from freight vehicles. We suggest a quid pro quo, whereby, in return for freight industry efforts to reduce impacts like vehicle noise and pollution, operating restrictions would be lifted.*

APPENDIX K

RESOURCES

TABLE K-1
CORRIDOR AND PRESERVATION RESEARCH MATERIALS

Study Name & Sponsor	Authors & Sponsor	Year Published	Web Location /Source
Guidelines on Corridor Management and Preservation in Texas	Ed Hard, Patricia Ellis, Brian Bochner, and Deborah Spillane	July 2008	http://tti.tamu.edu/documents/0-5606-P1.pdf
Creating Partnerships with Local Communities to Manage and Preserve Corridors: Technical Report	Ed Hard, Patricia Ellis, Brian Bochner, and Deborah Spillane	July 2008	http://tti.tamu.edu/documents/0-5606-1.pdf
CD-Rom Guidebook: Protecting Rail Corridors from Encroachment: Options to Reduce or Mitigate Against Encroachment/ Incompatible Use	Lisa Loftus-Otway, Hutson, N., C. Michael Walton, and Lynn Blais (Texas Department of Transportation)	May 2008	Available from Center for Transportation Research at UT-Austin
Protecting and Preserving Rail Corridors Against Encroachment of Incompatible Uses	Lisa Loftus-Otway, C. Michael Walton, Lynn Blais, and Nathan Hutson (Texas Department of Transportation)	January 2008	http://www.utexas.edu/research/ctr/pdf_reports/0_5546_1.pdf
BNSF Corridor Preservation Study	Prepared by HDR Associates for Puget Sound Regional Council	May 2007	http://www.psrc.org/assets/224/finalreport_noappendices.pdf
An Introductory Guide to Land Use Planning for Small Cities and Counties in Oregon	Oregon Department of Land Conservation and Development	January 2007	http://www.lcd.state.or.us/LCD/introductory_guide_to_land_use_planning.shtml

Interregional Corridors: Prioritizing and Managing Critical Connections Between Minnesota's Economic Centers (Transportation Research Record 1817)	Linda Zemotel and David Montebello (Transportation Research Board)	January 2007	http://trb.metapress.com/content/r9836106094525gv/fulltext.pdf
Noise Along Roadway Corridors: Strategies for Mitigation	Miami Valley Regional Planning Commission & Ohio DOT	January 2006	http://www.dot.state.oh.us/Divisions/TransSysDev/Environment/Documents/Policy/NOISE RESEARCH TOPICS AND DOCUMENTS/Noise Along Roadway Corridors_Strategies for Mitigation_January 2006 Final.pdf
Transportation Corridor Planning and Preservation in an Urban Environment	Kathryn Pett and Denise Dragoo (Author-led)	Fall 2006	Natural Resources and Environment (Published by American Bar Association Section on Environment, Energy and Resources)
Corridor Preservation Brochure	South Dakota DOT (South Dakota Department of Transportation)	2005	http://www.sddot.com/pe/Projdev/docs/corridor_brochure.pdf
Corridor Preservation Case Studies	Federal Highway Administration	December 2005	http://www.fhwa.dot.gov/realestate/cp_cases.htm
Railroad Corridor Transportation Plans—A Guidance Manual	Federal Railroad Administration	July 2005	http://www.fra.dot.gov/downloads/RRDev/corridor_planning.pdf
Community Building Sourcebook: Land Use and Transportation Initiatives in Portland, Oregon	TriMet Metropolitan Transportation District of Oregon	August 2005	http://www.trimet.org/pdfs/publications/community_sourcebook05.pdf
Corridor Management	CTC Associates (Wisconsin Department of Transportation)	April 2005	http://on.dot.wi.gov/wisdotresearch/database/tsrs/tsrcorridormgmnt.pdf
Cooperative Agreements for Corridor Management: NCHRP Synthesis 337	Kristine Williams (Transportation Research Board)	2004	http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_337.pdf
Effective Strategies for Comprehensive Corridor Management	Kristine Williams and Karen Seggerman (Florida Department of Transportation)	October 2004	http://www.dot.state.fl.us/research-center/Completed_Proj/Summary_PL/FDOT_BD544_06_rpt-web.pdf

Corridor Preservation: Best Practices for Local Governments	Kristine M. Williams and Robert Frey (Transportation Research Board)	2004	Transportation Research Record Issue 1895
Corridor Preservation Methods	North Carolina Department of Transportation	July 2004	http://www.ncdot.org/doh/preconstruct/tpb/shc/PDF/US64-NC49_Corridor_Preservation_Report.pdf
Corridor Management Pilot Projects	Center for Transportation Research and Engineering, Iowa State University (Iowa Department of Transportation)	July 2004	http://www.ctre.iastate.edu/reports/corridor_mgmt.pdf
Integrating Freight Facilities and Operations with Community Goals	TRB NCHRP 320 Synthesis Ann Strauss-Wieder (Transportation Research Board)	2003	http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_320.pdf
Corridor Preservation Best Practices: Hillsborough County Corridor Study	Kristine M. Williams and Robert Frey	April 2003	http://www.cutr.usf.edu/pdf/BestPracticesReport.pdf
State-Local Coordination in Managing Land Use and Transportation Along State Highways	Salila Vanka, Susan Handy, and Kara Kockelman (Texas Department of Transportation)	July 2003	Journal of Urban Planning and Development and Texas Department of Transportation Research Project 0-1873
Indiana Rail Corridor Preservation Study	Indiana Department of Transportation	February 2003	http://www.in.gov/indot/files/tri-fold.pdf
Catalog of Common Use Rail Corridors	U.S Department of Transportation, Federal Railroad Administration	February 2003	www.fra.dot.gov/downloads/Research/ord0316.pdf
Interregional Corridors: Prioritizing and Managing Critical Connections Between Minnesota's Economic Centers (Transportation Research Record 1817)	Linda Zemotel and David Montebello (Transportation Research Board)	2002	http://ntlsearch.bts.gov/repository/record/tris/00936222.html and http://trb.metapress.com/content/r9836106094525gv/
Entering the Quiet Zone: Noise Compatible Land Use Planning	Texas Southern University: Center for Transportation Training and Research	May 2002	http://www.fhwa.dot.gov/environment/noise/quietzon/index.htm

Assessment of Techniques for Corridor Preservation in South Dakota	Dye Management Group (South Dakota Department of Transportation)	March 2002	http://apps.sd.gov/Applications/HR19ResearchProjects/Projects%5CSD2001_11_final_report.pdf
Transportation Corridor Preservation: A Survey of Current Practice by Local Government Planning Departments	Federal Highway Administration	May 2000	http://www.ibrc.fhwa.dot.gov/realestate/cp_local.htm
Corridor Management—A Synthesis (Synthesis Report 289)	Transportation Research Board	2000	Available from TRB
Liveable Delaware Activity Corridor Capacity Preservation Program	Delaware Department of Transportation	1999	http://www.deldot.gov/information/pubs_forms/manuals/livable_delaware/pdf/corridor_preservation.pdf
Long-Range Highway Corridor Preservation: Issues, Methods and Model Legislation	David A. Thomas and Robert S. Payne	1998	13 BYU J. Pub. L. 1, 16-17
Corridor Preservation	North Carolina Department of Transportation- Rail Division	1998	http://www.bytrain.org/corridor/
HSGT Corridor Planning: Land-Use and Other Considerations (Authors)	William Gimpel and John Harrison	May/June 1997	Journal of Transportation Engineering
Managing Corridor Development: A Municipal Handbook	Kristine Williams and Margaret Marshall	October 1996	http://cutr.us/pub/files/corridor.pdf
Preservation of Transportation Corridors: Study of Legal and Institutional Barriers	Daniel Mandelker and Brian Blaser (Federal Highway Administration)	January 1995	Available from FHWA
Preservation of Transportation Corridors	Report of the Secretary of Transportation to US Congress (Federal Highway Administration)	November 1994	http://www.environment.fhwa.dot.gov/guidebook/vol2/doc5a.pdf
Corridor Preservation, Synthesis of Highway Practice (Synthesis Report 197)	Transportation Research Board	1994	Available from TRB

Preservation of Transportation Corridors: Case Studies and Analysis Factors in Decision-making	Rivkin Associates (prepared for FHWA)	December 1993	Available from FHWA
Corridor Preservation Techniques and Applications	Federal Highway Administration	May 1993	Participant Workbook National Highway Institute Course No 15130
Report of the AASHTO Task Force on Corridor Preservation	American Association of State Highway and Transportation Officials	July 1990	Available from AASHTO
Highway Corridor Preservation: A Synthesis of Practice	Michael A Perfater (Transportation Research Board)	August 1989	http://ntl.bts.gov/DOCS/perfat.html

TABLE K-2
AIRPORT RESEARCH AND LAND USE MATERIALS

Study Name	Authors	Year Published	Web Location
San Diego's Efforts to Mitigate Noise Impacts for Community Stakeholders	Airport Cooperative Research Program	November 2010	http://onlinepubs.trb.org/onlinepubs/acrp/acrp_iop_002.pdf
Enhancing Airport Land Use Compatibility, Volume 1: Land Use Fundamentals and Implementation Resources	Airport Cooperative Research Program (ACRP Report 27)	April 2010	http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_027v1.pdf
Enhancing Airport Land Use Compatibility, Volume 2: Land Use Survey and Case Study Summaries	Airport Cooperative Research Program (ACRP Report 27)	April 2010	http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_027v2.pdf
Enhancing Airport Land Use Compatibility, Volume 3: Aircraft Accident Data sources and trends; Economic methodology for assessing the costs associated with incompatible land uses; Annotated Bibliography	Airport Cooperative Research Program (ACRP Report 27)	April 2010	http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_027AircraftAccidentData.pdf http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_027EconomicAssessment.pdf http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_027AnnotatedBiblography.pdf
Next Generation Air Transportation System: Challenges with Partner Agency and FAA Coordination Continue, and Efforts to Integrate Near-, Mid-, and Long-term Activities Are Ongoing	United States General Accountability Office	April 2010	http://www.gao.gov/new.items/d10649t.pdf
Kissimmee Gateway Airport 14 CFR Part 150 Noise Exposure Map Report And Draft Noise Compatibility Program	City and Airport of Kissimmee, FL	April 2010	http://www.kissimmeeairport.com/noise/index.html
Aviation Land Use Compatibility Program - Example Scope of Work	WSDOT	2009	http://www.wsdot.wa.gov/aviation/Planning/ScopeOfWork

Study Name	Authors	Year Published	Web Location
National Airspace System: Regional Airport Planning Could Help Address Congestion if Plans Were Integrated with FAA and Airport Decision Making	United States General Accountability Office	December 2009	http://www.gao.gov/new.items/d10120.pdf
Approaches to Integrating Airport Development and Federal Environmental Review Processes	Airport Cooperative Research Program Synthesis 17	November 2009	http://onlinepubs.trb.org/onlinepubs/acrp/acrp_syn_017.pdf
Compilation of Noise Programs in Areas Outside DNL 65	Airport Cooperative Research Program Synthesis 16	November 2009	http://onlinepubs.trb.org/onlinepubs/acrp/acrp_syn_016.pdf
FAA Information on Airport Noise and Land Use Information	FAA	Last updated 2009	http://www.faa.gov/airports/environmental/airport_noise/noise_exposure_maps/
Responsibility for Implementation and Enforcement of Airport Land Use Zoning Restrictions: ACRP Legal Research Digest 5	William V. Cheek Associates	March 2009	http://onlinepubs.trb.org/onlinepubs/acrp/acrp_lrd_005.pdf
Effects of Aircraft Noise: Research Update on Selected Topics	Airport Cooperative Research Program Synthesis 9	September 2008	http://onlinepubs.trb.org/onlinepubs/acrp/acrp_syn_009.pdf
Land Use Management and Airport Controls: A Further Study of Trends and Indicators of Incompatible Land Use	Li, Kai Ming	September 2008	http://web.mit.edu/aeroastro/partner/reports/proj6/proj6-landmgt-aptcontrol.pdf
Airport Land Use Guidebook	Prepared by Mead & Hunt for IDOT	January 2008	http://www.iowadot.gov/aviation/airports/IowaAirportLandUseGuidebook2008.htm
Understanding Airspace, Objects and their Effects on Airports ACRP 03-13	TRB	2010	http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_038.pdf
Compilation of Airport Law Resources: ACRP Legal	Daniel Reimer KKR	January 2008	http://onlinepubs.trb.org/onlinepubs/acrp/acrp_lrd_001.pdf

Study Name	Authors	Year Published	Web Location
Research Digest 1			
Guide for Airport Advocates: Participating in the Planning Process	Airplane Owners and Pilots Association	2008	http://www.aopa.org/asn/arptAdvocate.pdf
Land Use Management and Airport Controls: Trends and Indicators of Incompatible Use: December 2007 Partnership for Air Transportation Noise and Emission Reduction	Li, K.M., Eiff G., Laffitte, L., and McDaniel, D.	December 2007	http://web.mit.edu/aeroastro/partner/reports/landmgt-proj6-2008-01.pdf
Aviation and the Environment: Impact of Aviation Noise on Communities Presents Challenges for Airport Operations and Future Growth of the National Airspace System	United States Government Accountability Office	October 2007	http://www.gao.gov/new.items/d08216t.pdf
Airport Noise Compatibility Planning Toolkit	Federal Aviation Administration	December 2006	http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/
Land Use Compatibility and Airports	Federal Aviation Administration	Last updated 2006	http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/III.B.pdf

Study Name	Authors	Year Published	Web Location
Airport Noise Compatibility Planning Toolkit FAA Resource Items: • Advisory Circular 150/5020-1- Noise Control and Compatibility Planning for Airports • Land Use Planning Process Flowchart • FAR Part 150 Process State and Local Resource Items: • State of CA Real Estate Transfer Disclosure Law & Statement • Sample Avigation Easement • Airport Impact Overlay District Ordinance • Compatible Land Use Bibliography	Federal Aviation Administration	Last updated 2006	http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/IV.Planning.pdf http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/IV.A.pdf http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/IV.B.pdf http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/V.A.pdf http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/V.C.pdf http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/V.E.pdf http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/V.G.pdf
Minnesota Airport Land Use Compatibility Manual	Prepared by Clarion Associates for MNDOT	2006	http://www.dot.state.mn.us/aero/avoffice/pdf/airportmanual.pdf
Building Blocks for Airport Land Use Compatibility	Virginia DOT	2006	http://www.doav.virginia.gov/building_blocks_for_land-use.htm
Overlay District Zoning Regulations: Airport Influence Area Land Development Code	Arapahoe County Public Works and Development Department	2004	http://www.co.arapahoe.co.us/Departments/PW/documents/1-3400.pdf
Oregon Airport Land Use Compatibility Guidebook	Prepared by Mead & Hunt and SATRE Associates for ODOT Aviation Division	January 2003	http://www.oregon.gov/Aviation/landuseguidebook.shtml
California Airport Land Use Planning Handbook	Prepared by Shutt Moen Associates for Caltrans	January 2002	http://www.dot.ca.gov/hq/planning/aeronaut/documents/ALUPHComplete-7-02rev.pdf
Aviation and the Environment: Airport Operations and Future Growth Present Environmental Challenges	US General Accounting Office	August 2000	http://www.gao.gov/archive/2000/rc00153.pdf

Study Name	Authors	Year Published	Web Location
Airports and Compatible Land Use Volume 1	Washington State DOT: Aviation Division	February 1999	http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/V.D.pdf
AOPA's Guide to Airport Noise and Compatible Land Use	Aircraft Owners and Pilots Association	1999	http://www.aopa.org/asn/land_use/
Final Policy on Part 150 Approval of Noise Mitigation Measures: Effect on the Use of Federal Grants for Noise Mitigation Projects	Federal Aviation Administration	October 1998	http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/II.E.pdf
Airport Land Use Planning	Sacramento Area Council of Governments	Not dated	http://www.sacog.org/airport/clups.cfm
Airport Land Use Commission Policy Plan	Sacramento Area Council of Governments	December 1992	http://www.sacog.org/airport/clups/2008/Airport%20Land%20Use%20Commission%20Policy%20Plan%20Amend%20Dec%201992%20-%2093-010.pdf
Community Involvement Manual	Federal Aviation Administration	August 1990	http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/VI.A.pdf
Excerpts from 1976 Aviation Noise Abatement Policy	Federal Aviation Administration	1976	http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/II.A.pdf

TABLE K-3
FREIGHT STUDIES

Authors	Title	Date	Link
St Louis Park Minnesota	Freight Rail Study Update	December 2010	http://www.stlouispark.org/light-freight-rail/freight-rail-relocation-study.html
Massachusetts Department of Transportation	State Rail Plan State Freight Plan	October 2010	http://www.eot.state.ma.us/downloads/90_Day Report/FreightRailPlan_Oct0610.pdf
Metro, Portland, Oregon Joint Policy Advisory Committee on Transportation	Regional Freight Plan 2035	June 2010	http://library.oregonmetro.gov/files//regional_freight_plan_june_10.pdf
Florida DOT, Miami Dade MPO, Broward MPO, Palm Beach MPO	South Florida Regional Freight Plan	March 2010	http://www.seftc.org/system/datas/30/original/MPO_regional_freight_plan_201003.pdf?1285177892
City of San Francisco	Industrial Inventory	2010	http://www.sf-planning.org/Modules/ShowDocument.aspx?documentid=8341
Northwest Indiana Regional Planning Commission	Freight Study	August 2010	http://www.nirpc.org/home/pdf/NIRPC_Freight_%20Report_FINAL_Updated_8_30_2010.pdf
Oregon Metro Gov	Regional Freight Plan Fact Sheet	Fall 2009	http://library.oregonmetro.gov/files/freighplan_fact_sheetpdf.pdf
Minnesota DOT	Western Minnesota Regional Freight Study	September 2009	http://www.dot.state.mn.us/planning/freightplan/files/WestDraftFinalReport.pdf
Maryland Department of Transportation	Maryland Statewide Freight Plan	September 2009	http://www.mdot.maryland.gov/Planning/Freight_Planning/Documents/Freight_Plan_Final.pdf
Maine Department of Transportation	Moving People and Goods – The Governor's Rail and Port Investment Plan	July 2009	http://www.maine.gov/mdot/ofbs/documents/pdf/MovingPeopleandGoods070209.pdf
Port Authority of New York and New Jersey Freight Committee	Cross Harbor Freight Program	February 2009	http://www.panynj.gov/about/pdf/NJTPA-Freight-Committee-Presentation.pdf
Tampa Bay Regional Goods Movement Study	Preservation of Local Truck Routes: A Primary Connection between Commerce and Regional Freight Network	2009	http://www.tampabayfreight.com/
Ohio DOT	21st Century Transportation Priorities Task Force Report	January 2009	http://www.dot.state.oh.us/groups/tft/Documents/21stCenturyTransportationPrioritiesTaskForceReport-Web.pdf
Wilbur Smith, Global Insight, Street Smart, and Georgia Tech	Atlanta Regional Commission Regional Freight Mobility Plan	February 2008	http://www.atlantaregional.com/File%20Library/Transportation/Roads%20and%20Highways/tp_ARFMP_final_report_2-6-08.pdf
Minnesota Department of Transportation	Freight Study: Association of Minnesota Counties	September 2007	http://www.mncounties.org/Committees/Policy/TPC/D7%20Freight%20Study%20AMC%20091307.pdf
New Jersey	Comprehensive Statewide	September 2007	http://www.state.nj.us/transportation/freight/pla

Department of Transportation	Freight Plan		n/pdf/2007statewidefreightplan.pdf
Baltimore Metropolitan Council	Truck Parking Partnership Study Report	October 2006	http://www.baltometro.org/freight/TruckParking.pdf
City of Portland	Freight Master Plan	2006	http://www.portlandonline.com/transportation/index.cfm?c=38846
Puget Sound Regional Council	Freight Action Strategy for Everett Seattle-Tacoma Corridor	April 2006	http://www.psrc.org/assets/1833/fastbrochure.pdf
Minnesota Department of Transportation	Statewide Freight Plan	May 2005	http://www.dot.state.mn.us/ofrw/PDF/MN_SFP_%20Exec_Sum.pdf
Baltimore Metropolitan Council	Freight-Related Intersection Evaluation	August 2005	http://www.baltometro.org/reports/Intersection-Boston&Ponca.pdf
Chicago Metropolis	The Metropolis Freight Plan	December 2004	http://www.chicagometropolis2020.org/PDFs/MetropolisFreightPlan.pdf
New York Metropolitan Transportation Council	NYMTC Regional Freight Plan	April 2004	http://webservices.camsys.com/nymtcfreight/documents/nymtc_task8.pdf
Florida, Alabama, Mississippi, Louisiana, Texas, New Mexico, Arizona, and California State Department of Transportation	I-10 National Freight Corridor	2001	http://www.i10freightstudy.org/1_overview.html
Florida Freight Stakeholders Task Force	Task Force Report	November 1999	http://www.cutr.usf.edu/pub/files/FreightBrochure.pdf
Baltimore Metropolitan Council	Freight Mobility Issues and Recommendations for the 1997 Baltimore Regional Transportation Plan	September 1997	http://www.baltometro.org/freight/FreightMobility1997.pdf

TABLE K-4
FREIGHT TASK FORCES

Name	Link
Baltimore Metropolitan Council – Freight Movement Task Force	http://www.baltometro.org/content/view/351/277/
Freight Committee of the Regional Transportation Advisory Council, Boston, MA	http://www.ctps.org/bostonmpo/5_meetings_and_events/2_past/2010/120810_Freight_Agenda.pdf
Chicago Metropolitan Agency for Planning Freight Committee	http://www.cmap.illinois.gov/freight-committee
Delaware Valley Goods Movement Task Force	http://www.dvrpc.org/Freight/DVGMTF.htm
Houston Regional Freight Study Task Force, TxDOT	http://txdot.gov/project_information/projects/houston/railway/taskforce.htm
Metro Regional Freight and Goods Movement Task Force, Portland, OR	http://www.metro-region.org/index.cfm/go/by.web/id=20887
South East Michigan Council of Governments Freight Task Force	http://www.semcog.org/Freight.aspx
Minnesota Freight Advisory Committee	http://www.dot.state.mn.us/ofrw/mfac.html
Nashville Area MPO Freight Advisory Committee	http://www.nashvillempo.org/regional_plan/freight/fac.aspx
New York State Department of Transportation Trucking Industry and Community Relations Task Force	https://www.nysdot.gov/programs/truckpolicy/taskforce
Ohio 21st Century Transportation Priorities Task Force	http://www.dot.state.oh.us/groups/tft/Documents/21stCenturyTransportationPrioritiesTaskForceReport-Web.pdf
Pennsylvania Rail Freight Advisory Committee	http://www.dot.state.pa.us/Internet/pdCommissCommitt.nsf/infoRFACMembership?OpenForm
Southwestern Pennsylvania Commission Freight Forum	http://www.spcregion.org/trans_freight.shtml
Port Authority of New York and New Jersey Freight Initiatives Committee	http://www.njtpa.org/About/Committee/FIC.aspx
Puget Sound Regional Freight Mobility Roundtable	http://www.psrc.org/about/advisory/roundtable/
North Jersey Transportation Planning Authority	http://www.njtpa.org/Involved/Comment/Pub_Partic_Plan.aspx
New York Metropolitan Transportation Council	http://www.nymtc.org/

TABLE K-5
USEFUL LINKS

Federal Agencies	
Federal Aviation Administration	http://www.faa.gov
Federal Highway Administration	http://www.fhwa.dot.gov/
Army Corps of Engineers	http://www.usace.army.mil
U.S. Maritime Administration	http://www.marad.dot.gov
Federal Railroad Administration	http://www.fra.dot.gov
United States Department of Transportation	http://www.dot.gov
Federal Motor Carrier Safety Administration	http://www.fmcsa.dot.gov
Bureau of Transportation Statistics	http://www.bts.gov
Transportation Security Administration	http://www.tsa.gov
Planning Organizations	
National Association of Counties	http://www.naco.org
National League of Cities	http://www.nlc.org
National Association of Development Organizations	http://www.nado.org
Association of Metropolitan Planning Organizations	http://www.ampo.org
National Association of Regional Councils	http://www.narc.org
National Association of Towns and Townships	http://www.natat.org
National Association of Home Builders	http://www.nahb.com
Freight Organizations	
Association of America Railroads	http://www.aar.org
American Short Line & Regional Railroad Association	http://www.aslrra.org
American Trucking Association	http://www.truckline.com
American Trucking Research Institute	http://www.atri-online.org/
American Association of State Highway and Transportation Officials	http://www.aashto.org
International Air Cargo Association	http://www.tiaca.org/tiaca/Default.asp
Pacific Maritime Association	http://www.pmanet.org/
International Maritime Organization	http://www.imo.org/Pages/home.aspx
International Federation of Freight Forwarders Associations	http://www.fiata.com/
National Freight Transportation Association	http://www.nftahq.org/
American Great Lakes Port Association	http://www.greatlakesports.org/sss.html
American Waterways Association	http://www.americanwaterways.com
Intermodal Association of North America	http://www.intermodal.org/
Planning Organizations	
American Planning Association	http://www.planning.org
Urban Land Institute	http://www.uli.org
Congress for New Urbanism	http://www.cnu.org
Regional Plan Association	http://www.rpa.org
US Railroads	
Burlington Northern Santa Fe	http://www.bnsf.com
CN	http://www.cn.ca
CP	http://www8.cpr.ca
CSX	http://www.csx.com
Kansas City Southern	http://www.kcsouthern.com/lang.html

Norfolk Southern	http://www.nscorp.com
Union Pacific	http://www.up.com
Freight Groups	
NASCO	http://www.nascocorridor.com/
OnTrack America	http://www.ontrackamerica.org/
Council of Supply Chain Management Professionals	http://cscmp.org/
Research Institutes	
Center for Transportation Research at University of Texas at Austin	http://www.utexas.edu/research/ctr
Center for Freight and Infrastructure Research and Education	http://www.wistrans.org/cfire/
Center for Supply Chain Research at Penn State University	http://www.smeal.psu.edu/cscr
Center for Logistics Management at University of Nevada-Reno	http://www.unr.edu/coba/logis/
Center for Logistics Education and Research at University of North Texas	http://www.cob.unt.edu/logisticscenter/about_us.php
North Carolina A&T State University Transportation Institute	http://www.ncat.edu/~sbe/centerins/tranins.html
Texas Transportation Institute at Texas A&M	http://tti.tamu.edu/
Transportation Research Board	http://www.trb.org
Volpe Center	http://www.volpe.dot.gov
Council of University Transportation Centers	http://cutc.tamu.edu/

APPENDIX L

ACRONYMS

AAPA – American Association of Port Authorities

AAR – Association of American Railroads

AASHTO – American Association of State Highway and Transportation Officials

ABA – American Bar Association

ACP – Airport Cooperative Research Program

AGLPA – American Great Lakes Ports Association

AMPO – Association of Metropolitan Planning Organizations

APA – American Planning Association

ARFMP – Atlanta Regional Freight Mobility Plan

ASLRRA – American Short Line and Regional Railroad Association

ATA – American Trucking Association

ATRI – American Trucking Research Institute

AWA – American Waterways Association

BNSF – Burlington Northern Santa Fe Railroad

BTS – U.S. Bureau of Transportation Statistics

CAMA – Canadian Association of Municipal Authorities

CARB – California Air Resources Board

CCEEB – California Council for Environmental and Economic Balance

CFR – U.S. Code of Federal Regulations

CFS – U.S. Commodity Flow Survey

CN – Canadian National Railway

CNU – Congress for New Urbanism

COG – Councils of Government

CP – Canadian Pacific Railway

CREATE – Chicago Regional Environmental and Transportation Efficiency program

CSX – CSX Railroad

CTA – Canadian Transportation Agency

CZMA – Coastal Zone Management Act of 1972

DOT – Department of Transportation

FAA – Federal Aviation Administration

FAST Corridor – Freight Action STrattegy for the Everett-Seattle-Tacoma Corridor

FCM – Federation of Canadian Municipalities

FHWA – Federal Highway Administration

FMCSA – Federal Motor Carrier Safety Administration

FRA – Federal Railroad Administration

GAO – U.S. Government Accountability Office

GDP – Gross Domestic Product

GIS – Geographic Information System

GLC – Great Lakes Commission

GLIS – Guild's Lake Industrial Sanctuary

GLMTF – Great Lakes Maritime Task Force

HME – Hazardous Materials Endorsement

HUD – U.S. Department of Housing and Urban Development

IANA – Intermodal Association of North America

ICCTA – Interstate Commerce Commission Termination Act of 1996

ISTEA – Intermodal Surface Transportation Efficiency Act of 1991

JADA – Joliet Arsenal Development Authority

KCS – Kansas City Southern Railroad

LMC – Licensed Motor Carrier

MARAD – U.S. Maritime Administration

MIZOD – Maritime Industrial Zoning Overlay District (Baltimore)

MOU – Memorandum of Understanding

MPO – Metropolitan Planning Organizations

NACo – National Association of Counties

NAHB – National Association of Home Builders

NARC – National Association of Regional Councils

NASCO – North America's Superior Corridor Coalition

NATAT – National Association of Towns and Townships

NCFRP – National Cooperative Freight Research Program

NFTA – National Freight Transportation Association

NLC – National League of Cities

NS – Norfolk Southern Railroad

RAC – Railway Association of Canada

ROW – Right of Way

RPA – Regional Plan Association

SAFETEA-LU – Safe, Accountable, Flexible Efficient Transportation Equity Act: A Legacy for Users of 2005

SCM – Supply Chain Management

SIRR – Staten Island Railroad

STIP – Statewide Transportation Improvement Program

STB – U.S. Surface Transportation Board

STP – Statewide Transportation Plan

TEA-21 – Transportation Equity Act for the 21st Century of 1998

TIACA – The International Air Cargo Association

TIH – Toxic Inhalation Hazard

TSA – Transportation Security Administration

TOD – Transit Oriented Development

TRB – Transportation Research Board

TWIC – Transportation Workers Identification Credential

ULI – Urban Land Institute

UP – Union Pacific Railroad

USACE – U.S. Army Corps of Engineers

USDOT – U.S. Department of Transportation